The RUBBER AGE

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A Merry Christmas and a Prosperous New Year

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LATE NEWS of the Industry

U. S. Rubber and Dunlop Form Pool to Operate and Hold Latex Patents

International Latex Process, Ltd., Formed With Sir Eric Geddes at Head and F. B. Davis Vice-Chairman—Hold Over 300 Patents—Firestone Earns $1.07 Per Share Last Year.

INFORMATION reaching the rubber trade from London indicates that European manufacturers are engaged in a program of development and research covering the use of rubber latex on a wide scale. As a first step, the United States Rubber and the Dunlop interests, for the purpose of first consolidating the many hundred patents on such processes, have organized a huge patent pool under the name of International Latex Processes, Ltd., to operate abroad.

The new company will not manufacture, but will license other manufacturers to utilize the patents as well as offer technical knowledge to the licensees. The foreign interests are represented in the patent pool by the Anode Rubber Company, Ltd., which was first organized in 1926 by the Dunlop Rubber Company, the Hungarian Rubber Goods Factory and the Compagnie Generale d'Electricite of France.

The Anode Rubber Company originally held patents covering the manufacture of articles from latex through electro-deposition, but these have been extended to cover almost every phase of latex manufacture. In this country the United States Rubber Company has been granted more than 200 patents, many of them basic in character, and has more than 100 additional applications pending at Washington.

According to the company, a multiplicity of new uses has been developed for rubber latex, the liquid form in which rubber comes from the tree, most of which are outside of the ordinary field of rubber manufacture. Certain qualities were found in latex which indicated that it could be used in the manufacture of various products formerly unrelated to the rubber industry. The latex was furnished to other industries in a chemically modified form, permitting its use along with other raw materials in the manufacture of a growing list of products.

Increasing quantities are being employed annually in such widely varying fields as textiles, paper, carpets, canning, leather and shoe manufacture. United States Rubber began shipments of rubber latex twelve years ago to its plant here, and last year about 12,500,000 pounds of rubber in that form were exported from the Far East.

According to the London trade, the formation of the European patent company definitely removes all difficulties and differences and "marks a development of the greatest importance in the establishment of latex manufacturing processes as a new industry," the future of which is likely to have far-reaching effects on producers and manufacturers alike.

Sir Eric Geddes, chairman of the Dunlop Rubber Company, will head the European patent group with F. B. Davis, Jr., of the United States Rubber Company, probably named as vice chairman.

Firestone Reports Earnings of $1.07 per Share for Past Year

THE Firestone Tire and Rubber Company reported a net profit of $5,151,927 for the fiscal year ended on October 31, equivalent, after preferred dividend payments of $3,024,232, to $1.07 a share on 1,986,189 common shares outstanding. This compares with $6,028,631, equivalent to $1.26 a share on 2,115,268 common shares, in the preceding year, before a special deduction of $1,809,361 for the adjustment of net current assets of foreign subsidiaries owing to fluctuations in exchange rates. After this deduction, the net income was $4,219,270, equivalent to 40 cents a share on the common stock.

The report indicated that earnings in the second half of the last fiscal year showed more than seasonal improvement, compared with the first half, when net income was $1,639,739, equivalent to 4 cents a share on 2,050,487 common shares, the amount outstanding on April 30. For the second half year the net income was $3,512,188, or $1.03 a share.

Sales for the year ended on October 31 totaled $84,337,173, against $113,797,282 in the preceding year. Net current assets were $53,262,247 on October 31, against $56,510,281 a year before, and net current liabilities were $3,923,386, against $4,965,903 on October 31, 1931.

In his report to stockholders, Harvey S. Firestone, chairman, said:

"With expenses curtailed, with more than a year's sup-

ply of rubber and cotton at a cost to us less than the cost of production, with $13,000,000 in cash and no bank indebtedness, we enter the new year with every confidence.

"Continuing the policy reported to you last year, we have purchased 125,819 shares of preferred stock at $4,689,453 less than par, which amount has been set up as a reserve for investment. This relieves the company of more than three-quarters of a million dollars yearly in dividend charges.

"This has been one of the most difficult and trying years for your company with prices of rubber and cotton falling below the cost of production. Rubber sold down to 2⅝ cents a pound, the lowest price in history, and nearly 50 per cent less than the minimum price of last year; the price of cotton dropped to 5 cents a pound, the lowest price in thirty-three years.

"We have purchased large quantities of rubber and cotton, and have more than enough to take care of our entire needs for 1933."

The consolidated income and expense statement for the year follows:

Firestone Tire and Rubber Co.

Consolidated Income and Expense

Net Sales		$84,337,173.33
Deduct: Cost of Goods Sold, Selling, Administrative and General Expenses (Exclusive of Depreciation)		72,960,392.30
Operating Profit		$11,376,781.03
Add: Interest Earned and Other Income		1,105,561.33
		$12,482,342.36
Deduct:		
Depreciation	$5,211,893.15	
Interest Paid	1,200,190.31	
Liberia Development Expenditures	180,272.24	
Adjustment of Operating Results of Foreign Subsidiaries due to Fluctuations in Exchange Rates	165,240.37	
Other Deductions, Net—Including Provision for United States and Foreign Income Taxes and the Elimination of Operating Results of Service Stores Applicable to Minority Interests	572,768.37	
		7,330,364.44
Net Profit		$5,151,977.92

Consolidated Surplus

Balance October 31, 1931		$36,380,958.47
Additions:		
Net Profit for Year Ending October 31, 1932—as Shown by Income and Expense Statement	$5,151,977.92	
Increase in Insurance Account Surplus	93,613.02	
		5,245,590.94
		$41,626,549.41
Deductions:		
Dividends Paid:		
Preferred—6%	$3,024,232.50	
Common—$1.00 per share	2,041,122.75	
	$5,065,355.25	
Net Charge Resulting from Cancellation of Employees' Stock Contracts and Reducing Treasury Common Stock to Par Value	564,756.33	
		5,630,111.58
Balance October 31, 1932		$35,996,437.83
Summarized as Follows:		
General Surplus	$31,147,374.84	
Surplus Arising from Issuance of Common Stock on Present Employees' Stock Contracts	2,099,800.00	
Insurance Account Surplus	2,749,262.99	
		$35,996,437.83

O'Neil Predicts 60,000,000 Tires As Replacement Equipment in 1933

WILLIAM O'NEIL, president of General Tire and Rubber Company, delivered the principal address at the convention of the National Tire Dealers' Association, held at Atlanta, Ga., November 14-16. A summary of his remarks is given below:

"Millions of people are out of work today because the salesmen of America have fallen down. More than 60,000,000 automobile tires will be needed in 1933 to equip cars that are now running on the roads. Will these 60,000,000 tires be bought? I don't know.

"I believe that they will if the tire manufacturers and merchants of America start to do some creative selling and some creative advertising, instead of merely trying to steal some business away from the man across the street by chiseling his prices down a few cents.

"Car owners' needs are best served by tire engineers found in tire stores that give personal service, like the old country doctors and the modern physicians who diagnose to find out what's the matter before they prescribe. What has been driving down mail order companies' volume of business? Personal salesmanship that shows that good tires cost only a little more than poor unreliable tires. The public needs a personal adviser to tell it what is good for it.

Norval P. Trimborn, Secretary-Manager, N. T. D. A.; Wm. O'Neil and Martin J. Barry, Re-elected President of the National Tire Dealers' Association

"Not one of the older large tire companies is worth as much today as it was in 1916. There must be something wrong. All of us who have our money in this business must analyze it to see if we cannot make it better.

"The tire industry has spent $18,000,000 in an effort to get $150,000,000 worth of business and it has been using the same methods that the mail order houses have used to make price appear to be the only attractive thing about a tire.

"In a time when rubber is selling for 2 per cent of the high price and 15 per cent of a normal price, we are advertising to the public to use less good rubber, to buy the cheapest thing in tires, tires that have less rubber content. Because rubber is so cheap, why should you put a lot in? Is that logical?

"Dealers should urge their manufacturers to immediately take his name off the cheap product, to immediately discontinue price as an argument for purchase, to get behind a program of showing the American public that the cheapest commodity today is rubber, that tires are much cheaper than automobiles, they are much cheaper than doctor bills, law suits and all those other things that accrue from the accidents caused by running cheap or old, used tires.

"If we get behind a program of constructive selling, constructive advertising, better things are in sight. Let's sell safety and non-skid and comfort and freedom from accidents instead of merely mileage and low price, then we will sell 60,000,000 tires that America needs in 1933."

(Other news of the industry will be found on Pages 173-177)

Is Carbon Tetrachloride *a Health Hazard in the Industry*?*

By J. Newton Shirley, M.D.
Arrow Mutual Liability Insurance Company

CARBON tetrachloride is CCl_4, tetrachlormethane, sometimes called phenoxin. It is made by passing chlorine over carbon bisulphide in a heated chamber in the presence of aluminum amalgam. The excess carbon bi-sulphide is washed out, leaving very little impurity, a negligible quantity from our standpoint. It is a colorless liquid with a specific gravity 1.584, a melting point of —19.5°C and a boiling point of 76.8°C. It readily volitailizes in air forming a heavy vapor. It is only slightly soluble in water, about 1 part in 200. It mixes readily with alcohol, ether, naphtha and similar hydrocarbons. The specific gravity is much greater than that of other solvents used in the rubber industry as shown in the following table:

	Spr. Gr.	*B.P.*
Carbon bi-sulphide	1.261	46.3
Acetone	.792	56.2
Chloroform	1.489	61.2
70°-72° gasoline (high test)	.7 —.74	40. —160
Carbon tetrachloride	1.595	76.8
Pure benzol	.879	79.6
100% benzol	.876—.888	80.
90% benzol		
50% benzol		
Pure tuloul	.870	110. —112
Commercial toluol	.866	110.5
Solvent naptha	.861—.869	125 —180
"Motor gasoline"		
Turpentine	.873	155 —180

The evaporation of carbon tetrachloride is much faster than that of other solvents save only carbon bi-sulphide, acetone, chloroform and high test gasoline. This is shown in the following table of comparative time of evaporation, using 5 cc of the solvent exposed in a petri dish 3½" in diameter, and ⅜" high.

Carbon bi-sulphide	4 minutes
Acetone	4 "
Chloroform	7 "
70°-72° gasoline (high test)	8 "
Carbon tetrachloride	9 "
Pure benzol	10 "
100% benzol	11 "
90% benzol	13 "
50% benzol	22½ "
Pure Toluol	29 "
Commercial toluol	31 "
Solvent naphtha	115 "
Motor gasoline	124 "
Turpentine	200 "

In going over this table, we first note carbon bi-sulphide, a solvent commonly used in the early days of the rubber industry, but now only used in small quantities and then under proper precautions because of its poisonous factors on those exposed to its vapors. Acetone, being a solvent for certain gums and resins but not for rubber generally, is only used in small quantities. Chloroform is not only toxic but expensive. High test naphtha, carbon tetrachloride and pure benzol are practically the same in evaporation time. Pure benzol is costly and a particularly toxic material. Carbon tetrachloride is, of course, safer than high test naphtha from the fire hazard viewpoint. 90 per cent benzol, the usual form used in the rubber industry, requires 50 per cent more time for evaporation than carbon tetrachloride. And so on down the list to the usual solvent used, solvent naphtha. This requires more than ten times the amount of time used to evaporate a like amount of carbon tetrachloride. For this reason, we can readily understand the demand for the use of carbon tetrachloride in those places where speed is desirable and danger from fire is minimized.

This brings us to the direct question of the toxic action of carbon tetrachloride. We will commence by noting its closeness to chloroform— $Cl-\overset{Cl}{\underset{Cl}{C}}-Cl$ and $H-\overset{Cl}{\underset{Cl}{C}}-Cl$ or tetrachlormethane and trichlormenthane.

Chloroform is definitely listed in the narcotic group and its physiological action and toxic qualities are well known because of the use it has had in the medical field as a drug and an anaesthetic.

Its use externally is that of a counter irritant as in liniment. Here it causes smarting and burning of the skin. If applied too long, it will go on to actual blister formation.

Internally, it causes a warm to burning sensation in the stomach. Later, if the amount taken is too large, it causes vomiting and diarrhoea, the result of increased intestinal peristalsis, nature's attempt to protect the body.

Taken through the lungs by inhalation and is free in the circulation, it goes on to the anaesthetic stage, usually expressed in the following sequence of events:—

Excitation:—the result of the chloroform causing direct stimulation to the cells of the brain or depression of certain controlling centers. We are told by physiologists that paralysis of certain controlling centers is the true explanation.

Narcosis:—a depression of the various centers in the central nervous system, starting first with the higher centers of the brain, intellect, etc. Then the cord and finally the medulla or the vital centers existence. The sensory centers of the cord are affected before the motor. The state of narcosis may continue for a long time or the action may progress to the point of paralysis of all centers or death. During this process, the patient is seen to go through the following emotions:—first a feeling of warmth, flushing of the face, a tingling sensation of the skin, ringing in the ears, blurring of the vision, then more or less violent struggling and later relaxation. During anaesthesia, the body temperature drops fairly rapidly, respiration slows up and is more shallow than normal and the heart rate is usually slowed. This suggests that there is a general slowing up of body metabolism.

Death may occur in any stage. If it occurs early it is the result of reflex stimulation of the vagus nerve, the depressor nerve to the heart, from the effect of the irritant action of chloroform on the mucous membrane of the nasopharynx, nose and throat.

Later, death is the result of poor heart muscle or respiratory

*Paper presented before the 21st Annual Safety Congress, Washington, D. C., Oct. 3-7, 1932.

paralysis, carrying the anaesthesia too far. There is a form of delayed death, usually coming on four or five days later, this usually follows prolonged anaesthesia or repeated anaesthesia. In these cases, the disturbance appears to be the result of damage to the liver, heart and kidneys. It is characterized by the patient becoming restless and vomiting repeatedly. Jaundice soon develops and there may be small hemorrhages into the skin, a common occurrence in jaundice. This goes on to delirium and death.

Now carbon tetrachloride is the next higher halogen concentration of methane with chlorine to chloroform. Its action should be along very similar lines. The British experimenters claim it is twice as toxic as chloroform. The German authorities say it is only half as toxic. Pharmacologists claim the toxic action of methane increases according to the halogen concentration, or the British view point. But in experience, it seems that it is a much less reliable anaesthetic and a much more injurious drug for the body to throw off. This is said to be the result of the larger amount of the chlorine radical present. There is a much more violent period of excitation when narcosis is produced.

We will try to follow the effect of carbon tetrachloride on the body along the lines laid down for chloroform. We first note that when used externally, it causes a sensation of warmth and smarting to the skin as noted with chloroform. I have never seen this go on to blister formation when prolonged exposure occurs. Since this is an excellent fat solvent, it will quickly remove the normal oily and greasy secretion of the glands of the skin, leaving the surface exposed to chapping and drying out. Such a condition may allow secondary infection to take place. While this has been reported, it must be very rare as carbon tetrachloride has been used at Hood Rubber in the first aid room for years to remove excess oil from wounds and skin before applying adhesive strapping. I have never seen what I could call an infection from its use in this way.

There is evidence to believe that carbon tetrachloride can be absorbed through the skin because of its high affinity for fat. I can find no record of a toxic condition resulting from such absorption alone.

Absorption by Mouth

The next notation is that of absorption when taken by mouth. There are several references of the use of carbon tetrachloride as a vermifuge, a drug given to drive out intestinal parasites, especially hook worm. In this particular connection, carbon tetrachloride has been administered by mouth up to 1cc per 5½ kilograms body weight. This amount has caused giddiness and vomiting. The usual maximum dose given is four cc and it is considered proper to wait three weeks before giving another dose. Cases are noted where such treatment has resulted in sudden death, preceded by nausea, vomiting, diarrhoea and prostration. Autopsy has shown hemmorrhage into the intestinal tract, the result of local irritation of carbon tetrachloride, and fatty degeneration of the liver characterized by marked central necrosis. This is explained by the fact that as carbon tetrachloride is absorbed by the intestinal tract, it first reaches that part of the liver structure.

In other cases, the patient complained of abdominal pain and tenderness over the liver region, where enlargement of the liver was noted as being present. After a few days of loss of appetite the patient returns to a fairly normal condition. There may be some evidence of kidney irritation during the illness. This is said to be the result of the irritating effect on the kidneys of the bi-products of the disturbed liver metabolism. A few cases showed evidence of irritation to the central nervous system or brain as noted by clonic convulsions followed by periods of listlessness.

In animal experiments, Drs. Phelps and Hu, (*J. A. M. A., April*, 19, 1924, *p.* 1254), studying the effects of carbon tetrachloride on animals, as the result of two fatal cases on humans, noted the similarity of the conditions found in animals at autopsy, to those found in the fatal human cases. They list their findings as follows:—

1. Two organs were primarily effected, the liver and the suprarenal glands.
2. Central necrosis of the liver.
3. The extent of the lesion is in direct proportion to the size of the dose.
4. When the dose is sufficiently large, necrosis of the liver cells begins within 4½ hours and becomes marked after 20 hours. Regeneration of liver cells is prominent in forty hours and is complete in eight days if the patient still lives.

I should like to mention here a case that is extreme but of great interest. A man had taken several drinks of good and bad liquor and was still quite thirsty. In desperation he grabbed a bottle of carbona, a redistilled carbon tetrachloride, and drank it. He died almost at once. At autopsy, his liver was largely dissolved and free fat could be obtained from the blood in the heart. This is mentioned as interesting but otherwise of no value.

Now you may say that consideration of the toxic action of carbon tetrachloride when taken by mouth is not important, but I will call your attention to this as I consider that the most dangerous toxic effects of exposure to lower concentration of carbon tetrachloride vapors may be due almost entirely to that amount of carbon tetrachloride which is absorbed by the saliva and swallowed. This enters the system as though it were injected.

Turning to the inhalation of carbon tetrachloride vapors, we enter the main source of danger in so far as the rubber industry is concerned. Fairly concentrated fumes cause smarting and burning of the eyes, nose and throat. Then we note running of the eyes and nose and increased amounts of saliva in the throat with swallowing. The employee soon feels sick to his stomach and vomits. If the worker is able to continue work, he becomes sluggish and confused, mental dullness. He loses his finer sense of touch. If such exposure does not use him up, he complains for the next day or two of the loss of appetite. It seems that his symptoms, if he gives up work, continue to grow worse for several hours and will require three to six days to clear up.

I can clearly remember two employees who used the usual 60-40 carbon tetrachloride—naphtha solution cleaning machinery. The next morning, they both reported to the plant hospital, unable to work. The first employee remarked that he worked in the fumes, which he thought were strong, in a shallow pit cleaning up the grease about a motor. His eyes smarted and burned. His nose ran and he soon felt sick, going out doors and vomiting his lunch. He continued to work the rest of the day but accomplished little. That night, he noticed pain in the right upper part of the abdomen and slept poorly. He could eat no breakfast and felt too weak to work. Poor booze was suspected but investigation of the man's habits practically ruled this out. He returned to work three days later and has been in good health since. The other man complained of nausea but did not vomit. He did have pains in his upper abdomen but was out from work only one day. Since this occurrence, varnoline has been used cleaning machinery with safety and less expense.

Inhalation of Carbon Tetrachloride Vapors

I have also noted an incident where a tire paint, through the activity of the fire inspector, was made flash proof by adding carbon tetrachloride in sufficient quantities. The men on this job at once complained of nausea and loss of appetite. They said they commonly ate their lunches only to go around the corner and throw them up. The paint was changed at once and the symptoms disappeared.

You will note that in each case, the fumes were strong and were constantly being agitated, being carried up into the breathing area of the worker.

There is one more thing to note in the inhalation of carbon tetrachloride vapors. That is always mentioned in articles on this subject but now disputed by some people. When it is used in the presence of moisture, especially in heated rooms, commonly seen when used as a fire extinguisher, it breaks down into carbon monoxide, phosgene, and hydrochloric acid fumes and chlorine. Phosgene is particularly irritating to the mucous membranes, pneumonia has been reported following exposure to such fumes where carbon tetrachloride has been used as a fire extinguisher in confined places.

My attention has been called to one case where a man had used

carbon tetrachloride to clean up the floor of a varnish room. In this case, the floor of the room was warm and the ventilation poor. This man went home feeling sick and later died from bronchial pneumonia. I do not believe this was the result of carbon tetrachloride fumes but might have been the result of broken down fumes: phosgene, chlorine, etc.

The International Labor Office Occupation and Health Bulletin No. 93 cites fatal cases where carbon tetrachloride was used in a submarine fire, death occurring 5-9 days later from pneumonia.

There have recently appeared two articles on carbon tetrachloride poisoning which I think should be brought to your attention. Dr. McGuire (*J. A. M. A. Sept.* 17, 1932), mentions seven cases of carbon tetrachloride poisoning among employees in a felt plant. The solution was used freely, the felt being passed through the warm carbon tetrachloride solution to remove spots. All the men exposed complained of nausea and vomiting, lasting for one to three days. Three vomited small amounts of blood, six had diarrhoea, five had headache, four complained of burning and smarting of the eyes and mouth, two had liver enlargement with jaundice, four had evidence of kidney irritation, one had acute nephritis and one had bronchial pneumonia. This includes about all that has been noted as possible carbon tetrachloride symptoms. He also noted that the use of calcium in medication helped these cases in his opinion.

To my mind, this picture might similate conditions found in the rubber industry where cementing or cleaning is done in quantity.

Specific Cases of Poisoning

Another recent case was reported by Dr. Brutsch, New Haven Hospital (*J. A. M. A. Aug.* 27, 1932, *p.* 728). A man was cleaning old telephones with a 60-40, carbon tetrachloride—gasoline solution in a poorly ventilated room where the fumes were unmistakable. He found himself giddy with headache towards the end of the day and was frequently nauseated when about to eat his evening meal. Two months later while still on the job, he was seized with diarrhoea lasting three weeks. He noticed his abdomen had grown larger. Later he developed morning nausea, weakness and a dry irritating cough with a stringy sputum. Others on this work complained of nausea, dizziness and lack of appetite. They left this work, he, alone, stayed on the job.

After a month of treatment, this man improved and returned to other types of work. He has continued to work since. This case notes cirrhosis of the liver and brings up the question of his alcoholic tendencies, but removal from exposure to carbon tetrachloride vapors did allow the condition to clear up.

In the *Journal of Industrial Hygiene* (*Sept.*, 1932, *p.* 168), F. H. Haigler reports an abstract from the *U. S. Naval Medical Bulletin* (*Jan.*, 1932, *pp.* 137-139) on cases of carbon tetrachloride poisoning. These cases occurred on board a naval vessel carrying tins of carbon tetrachloride, which were stored in a poorly ventilated compartment. Some containers were rusty and leaked. A party of five men were sent to remove them. Within five minutes after 2-3 quarts were spilled, two men collapsed. The other three also became anaesthetized while trying to rescue them. Through the good fortune of timely discovery, all were removed to the sick bed and recovered, except for weakness, nausea and somnolence, lasting, in two cases, for some hours. This demonstrates that narcosis is possible without lasting effects.

I have seen notations of possible carbon tetrachloride cases where "bootleg" whiskey was a complicating factor. In these cases, the most marked findings were in the kidneys. In animal experiments run in connection with the study of these cases, similar kidney conditions were found where the animals were fed similar types of whiskey. Thus men with alcoholic tendencies are more prone to disturbances when exposed to carbon tetrachloride than others. The precautions noted in giving carbon tetrachloride as a drug, warn against the use of alcohol at the same time.

All these notations have given us very little we can rely on as to what amount carbon tetrachloride vapors could be used safely. The *Journal of Industrial Hygiene* (*Sept.*, 1922), notes that 718 parts per million is barely noticeable but 6,091 parts per million is considered strong. Lehmann notes that 3,980 parts per million may be inhaled for about an hour without very serious effects. Frois reports that 15 mgs. per litre of air, about 24,000 parts per million, causes nausea, headaches and vomiting in humans. These are the only calculations I have been able to find. I understand that some work is being contemplated along this line.

Summary

Until that time, I consider we should carefully consider the advice given by Dr. Elizabeth B. Bricker in *Safety Engineering* (*Dec.*, 1931, *p.* 358):

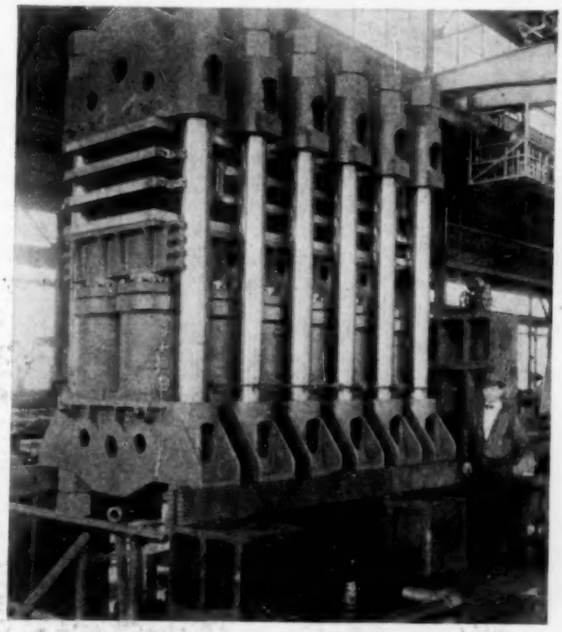
"The following precautions should be noted:—

1. Enclosed systems as far as practicable
2. Exhaust systems with the outlet near the floor, the systems to be kept in operation until the residual fumes are removed
3. Employees should be watched for the least sign of illness."

If we follow her plan, we will surely play safe and some day we may know more definitely how far from that plan we may transgress. I doubt if we will ever be justified in using any material quantity of carbon tetrachloride in the open room without providing adequate down draft ventilation.

Largest Platen Press

THE Lake Erie Engineering Corporation, Buffalo, N. Y., manufacturers of hydraulic machinery, have just shipped what they claim is the heaviest tonnage steam platen press ever built. The press can apply the enormous pressure of 10,000 tons or 20,000,000 pounds on the platens. This pressure was affected by the means of twelve 18-inch rams at 6,500 pounds per square inch hydraulic pressure.



Largest Hydraulic Platen Press

The press is of the three opening type with four steam plates 48 inches wide by 144 inches long.

The press is of steel construction throughout with the exception of the semi-steel rams. The columns are of a special alloy steel showing ultimate tensile strength of over 120,000 pounds from test bars.

The press was put through an exhaustive test and the deflections of the platens accurately measured. The greatest deflections anywhere in the platens did not exceed .004 inch under actual working loads as measured by customer's inspector.

New Pneumatic-Tired Railway Coach

Reading Railroad Puts Rail-Bus Into Operation on Regular Runs Out of Philadelphia—Pneumatic Tire Is One of Its Chief Features

DELIVERY of the first pneumatic-tired, Diesel powered railroad coach ever built for an American railroad, was made on October 28, by the Edward G. Budd Manufacturing Company, of Philadelphia and Detroit, to the Reading Railway, at the Reading Terminal in Philadelphia.

The car, officially named "Reading 65," has been put into immediate service on the Reading system.

The "Reading 65" was designed to meet the exacting requirements of a special suburban service. It has the adaptability of a trolley car and yet a performance suitable to main line operation. Double-end operation, one-man control, Diesel-electric drive and great strength with light weight, all make for an unusually low cost of operation. With a capacity of forty-seven passengers, the operating expense is covered by a load of six passengers at three cents per mile. All of this has been realized in a vehicle offering traveling comfort never before found in a public conveyance.

Wheels are of Budd design to accommodate the Michelin-Goodyear rail car tire exclusively furnished to the Budd Company. Interest centers about these tires, as they contribute so largely to the comfort and quietness of the car. The common questions are "What happens if there is a blowout or puncture?" and "How long do the tires last?" The answer to the first is "Nothing," for in case of puncture a solid metal ring inside of the tire shoe supports the tire and prevents its collapse. The tire life under normal operation is about 20,000 miles.

To show the safety of the car in connection with possible tire trouble, Griscom Bettle, one of the Budd officials, on the day of the delivery, caused a blowout by shooting one of the tires with a shotgun at close range while the car was going at full speed, before numerous sound movie cameras and a group of special guests. Nothing whatever happened. The car continued on for half a mile or so, then backed up before the cameras where the crew jacked up the truck and changed the tire in a few seconds, exactly as in automobile procedure.

This car has an acceleration of 2 m. p. h. per second and a high speed of from 50 to 55 m. p. h. The ability of the car to decelerate quickly is much greater than will ever be necessary under normal conditions, but is available in case of emergency. The car will turn safely on a 55-foot radius curve, making it possible to turn city street corners, if used as a street car.

The car is 51 feet overall in length and weighs 22,000 pounds. The inside width is 9 feet with 26-inch aisles and the headroom inside is 7 feet 5 inches. Large vestibules at both ends make for quick loading and unloading of passengers and leave room for light luggage.

The seats for forty-seven passengers are reversible, sturdy and durable. Steel tubing, high-grade leather and rubberized hair upholstery and drop forgings have been combined in a comfortable unit weighing about fifty-two pounds.

The car is heated by hot water from the engine, regulated by thermostats. Two fans with a capacity of 1,200 cubic feet per minute supply forced ventilation uniformly distributed through floor ducts. The air is exhausted by means of a ceiling conduit, which also accommodates the lighting fixtures.

The "Reading 65" is provided with standard head and signal lights. Since the pneumatic tires insulate the car from the tracks, all types of railroad signals are operated through an unique system composed of four pairs of rocking brushes energized by an auxiliary current. This equipment was developed by the cooperation of Budd engineers with the Union Switch and Signal Company. The doors, traps and steps operate by a single air lever.

The operating cost of this car is about 12c per mile, including interest on the investment, depreciation, all maintenance costs and replacements, fuel oil and lubrication, but not including crew. In the operation of a similar car over a period of one month in regular service, 2,181 passengers were carried 2,150 miles at a total lubricating and fuel cost of $24.96.

The New Pneumatic-Tired Rail Coach in Operation

The Reading "65"; (right) Griscom Bettle, Budd company official, showing the construction of the tire on the new coach. Note the solid metal ring inside the tire which allows it to collapse only 3/8" in case of puncture in operation

ELECTRICITY FOR CURING *is Now Used Successfully*

Experience Record of One Rubber Factory in Manufacturing Small Molded Rubber Goods By Electrical Cures

By H. O. WEST
The West Company, Philadelphia, Pa.

***Editor's Note*—The question of the efficacy and economy of utilizing electrical heat in curing rubber goods has presented itself as a problem for the plant engineer on a number of occasions. "The Rubber Age" carried an article on the subject, in its issue of June 25, 1931, entitled "Electrical Heat in the Vulcanization of Rubber." Little practical data, up to this time, has been gathered which could be termed helpful to the plant executive in solving his problem. The following article, however, is the recorded experience of a rubber manufacturer in this connection.**

ELECTRICITY has been successfully used by our company for the vulcanization of small molded rubber items for a period of nearly two years.

In a very large installation it may be doubtful as to whether the use of electricity would be a saving over steam. Conditions vary in different plants and what may be practical in one plant may not be in another. However, we have tabulated our results and advantages with the use of electricity in the hope that it may be of some benefit to others.

We manufacture small molded rubber articles, mostly of a technical nature. We also manufacture a considerable number of rubber dropper bulbs and items of a similar character.

In our manufacturing we formerly used the conventional type of steam platens, the steam being furnished by a gas fired boiler. Our boiler had a limited capacity and an additional volume of business gave us the problem of either installing a larger boiler or using electricity. We decided to experiment with the use of electricity and we equipped one press with electrically heated platens. Our results were so satisfactory that we decided to discard steam entirely and changed all our presses over to the electric heaters.

Each of our presses has three platens, 20" square and 2" thick. Each platen has a rating of 3.8 kilowatts and has a separate thermostatic mercoid control, which keeps the temperature within two degrees of the operating temperature of 310 degrees Fahrenheit.

Electricity is an ideal source for heat and for economical reasons it is essential that equipment be properly designed and insulated. In our installation it was important to secure the proper insulation of the top and bottom platens. It was rather difficult to obtain a material which would stand the heat and the working pressure of 2500 pounds. The problem was solved by using pressed fibre 5/8ths of an inch thick and ground to size to insure absolutely even thickness. Between the board and the platen, two sheets of asbestos paper were placed in order to better protect the fibre. Of course we covered the head of the press with asbestos cement. This combination is very satisfactory and the head is always cool enough to touch with a bare hand even though the platen is heated to 310 degrees.

We use steel molds, the average weight of which is 81 pounds. The curing time is five minutes with one minute for change, making a six minute cycle. The molds are removed from the press at 310 degrees and returned at approximately 260 degrees, thereby 1,625 pounds of steel are heated from 260 degrees to 310 degrees per hour and approximately 20 pounds of rubber cured per hour per press. The power consumption according to a meter test is 4,010 watts per hour per press. In estimating it might be conservative to figure 5 kilowatts per hour. If the molds are left in the press for one hour without change, the radiation loss is 1,400 watts at 310 degrees Fahrenheit.

An Installation of Hydraulic Presses Equipped with Electric Platens in the Plant of the West Co.

The power company standby charge is considerably lower than the total rating of kilowatts of the presses, due to the fact that power on the platens is not on all platens at one time except in heating up in the morning. The power is on and off the platens depending upon the temperature and during operation not more than one third to one half of the platens are on at one time.

The molds are placed in the presses cold in the morning and it takes about thirty-five minutes to bring the presses and molds from room temperature to 310 degrees Fahrenheit. In passing, a word of caution may be in order. Electricity may not seem to have the same quick come-back that steam does, but this can be readily overcome by the use of heavier platens than would be used for steam and with some extra power rating.

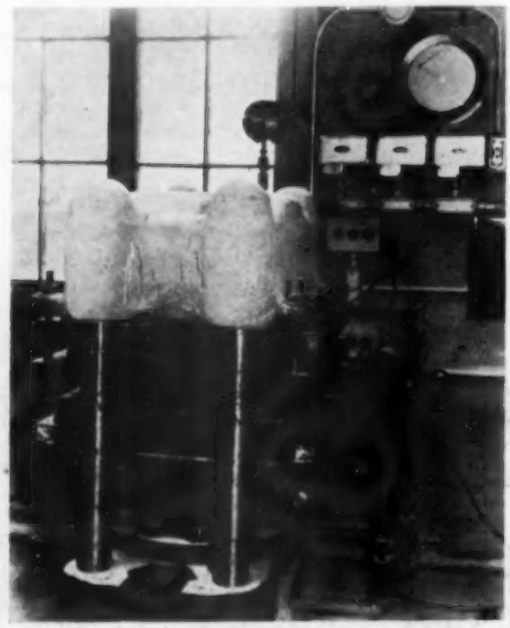
Some of the advantages of using electricity rather than steam as we have found it, can be tabulated as follows:

1—Improved working conditions. There is no moisture or steam from leaking valves, swing joints, etc., and conse-

quently much less humidity. This is important in the hot, humid days of summer as electrical heat is dry heat.

2—Electricity is automatically controlled. A clock automatically throws on the power at 7:25 in the morning and at 8.00 the platens have reached operating temperature. The clock throws the power off again at night.

3—Boiler and boiler troubles are definitely eliminated. There are no swing joints to require attention. The elimination of steam pipe lines provides greater working space and greater access to presses.



One of the Presses with Mercoid Controls and Pilot Lights

4—In case of overtime, one or more presses may be operated as desired with better economy than keeping a boiler under fire.

5—The elimination of the boiler affects some saving in the insurance rates.

6—Additional equipment may be added from time to time without any consideration of boiler capacity.

7—Small initial investment. Electric presses are self-contained units and do not require boilers, fuel storage and ash handling equipment, etc. It does not require the labor of engineers, firemen, etc.

"Specification" Carbon Black*

By R. H. EAGLES
J. M. Huber, Inc.

THE DEMAND for increased tread wear inevitably implies the use of more gas carbon black, since resistance to abrasion increases directly with the proportion of black used. The result is that carbon black percentage loadings have almost doubled within the past two years and therefore the virtues or defects of the particular black used are magnified two-fold. Non-uniformities, which were insignificant at fifteen or twenty volume loading assume much greater importance at thirty volumes.

Mixing and processing troubles, which have always been attributed in some degree to carbon black, even at the relatively low loadings, have developed into real factory problems when the black represents a substantial portion of the entire tread mix.

The problem of flex-cracking has recently come into greater prominence due both to the more flexible construction of the tire, and to its heavier black compounding, which naturally involves increased stiffness. Just as the motor-car builder has passed on much of his new problem to the tire manufacturer, so has the latter placed the responsibility upon the carbon black producer for a product of even firmer and more uniform quality.

Studies of Screen Tests

Many rubber technicians have recently come to place prime emphasis on the fineness of the carbon black, or rather the amount of "fine grit" present. Carbon black has always been considered a product of entirely impalpable fineness, providing ordinary foreign matter, as detected on a 60- or 100-mesh screen, was absent. Recent studies, however, have disclosed that two samples of black, apparently identical from all ordinary physical tests, including the 100-mesh screen test, may differ by as much as 1 per cent residue on 325-mesh screen. By plotting the screen analysis curves of two such samples it can readily be imagined that the difference might amount to 5 per cent or 6 per cent, if the curves could be projected to 600-mesh, which, of course, is beyond the limit of ordinary screen analysis.

In other words, given two carbon blacks, both entirely satisfactory from standpoint of previous testing standards, one may actually represent practically 100 per cent of true, impalpable carbon black articles, with inherent reinforcing properties, while the other may contain only 95 per cent, with the remaining 5 per cent not only a worthless, but a distinctly harmful, adulterant. This adulterant consists largely of particles of hard, carbonized carbon formed in the burning operation.

As the importance of this new "fine grit" factor has come to be recognized, purchasing specifications for carbon black have been revised accordingly, and it has devolved upon the black producer to change his production methods and equipment to meet the new requirements. The new type of carbon black is rapidly coming to be known as "Specification Black," representing production which is made and tested to the 325-mesh grit test, as opposed to "Non-specification Black," or previous production which may or may not comply, depending on accidental conditions at the time it was produced.

More Uniform Particle Size Important

Aside from the actual question of whether a relatively small percentage of fine grit is or is not significant in tire service *per se*, it is argued that by virtue of the added control and refinement required in its production, there is bound to result a more uniform particle size in the "Specification" type. This may prove an important factor in improved dispersion.

Practical tire-service experience, backed by exhaustive laboratory research, has definitely indicated a decrease of the flex-cracking tendency, and an increase in tear resistance, in favor of the new specification. Ordinary tensile strength and stress strain characteristics do not seem to be affected, and it is yet to be determined whether abrasion resistance or other factors will be influenced.

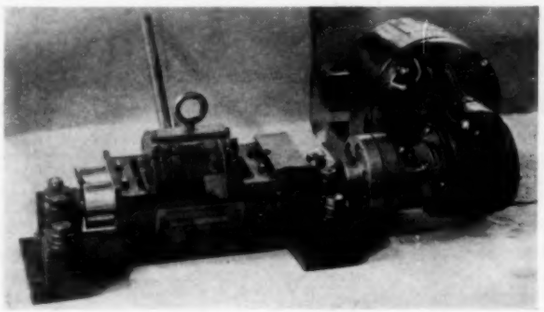
Aside from the definite advantages already established, however, this new development may prove of real value from another angle. If, as some rubber technicians are coming to believe, this "fine grit" test represents a comprehensive yardstick as to what constitutes good black or bad, then here is a relatively simple and quick physical test which can be readily checked both by carbon black producer and consumer to evaluate quality.

*Reprinted from *India Rubber Journal*, September 10, 1932.

"Midget" Banbury Mixer

THE new "Midget" size Banbury mixer recently introduced by Farrel-Birmingham Company, Inc., Ansonia, Conn., is designed to provide a machine of smaller capacity than existing laboratory models, for special experimental work on rubber, asphaltic materials, phenolic condensation products, resinous compounds, paints, lacquers and other plastic materials. It is designed on the same general principle as the larger laboratory and production Banburys to produce results in the laboratory which can later be duplicated in the factory. Its small size and simplified construction permits its sale at a very low price.

It will be seen from the illustration that the "Midget"



Midget Banbury

Banbury is hardly larger than the motor that drives it. It has a capacity of 90 to 150 grams, depending on the specific gravity of the stock. The complete unit, including the motor with integral gear reduction weighs only 350 pounds, packed for shipment. The overall dimensions are as follows: length, 30⅝ inches; width, 17⅜ inches; height, 11 inches. The machine is designed to be mounted on a bench or table of suitable height for convenient operation. The installation expense is negligible.

The two rotors of the "Midget" Banbury are of exactly the same type as the larger commercial machines. The mixing chamber has only one opening, that being in the top, through which ingredients are charged and the mixed stock discharged. The mixed batch is quickly discharged by tilting the mixer by means of the handle attached to the back of the machine. A floating weight is provided to keep the stock within the sphere of mixing action. Sheeting of the stock after mixing is accomplished by a pair of rolls mounted on extensions of the rotor shafts. The motor and integral gear unit are connected to the mixer by a flexible coupling. The wide range of speeds obtained from the motor makes the machine particularly effective for experimental work.

As special features, when required, the mixed chamber can be arranged for vacuum or pressure and for heating and cooling.

Continuous Vulcanizing Process for Inner Tubes*

A PATENT has been applied for in Germany for an inner tube extruding machine combined with a continuous vulcanizing process, without the use of a mandrel or pressure vulcanizing chamber. The extruded inner tube, as it comes out of the tubing machine, lands on an endless steel band conveyor which passes through a long, tubular, double-walled vulcanizing chamber. The space between the two walls of the chamber carries the steam or hot water under pressure for producing the heat required for vulcanizing the tube from the outside, while hot, dry air mixed with talc powder is blown into the tube as it is formed and vulcanizes the tube from the inside.

The vulcanizing chamber, about 100 to 125 feet long, is made up of two halves, split and hinged longitudinally, to permit opening for inspection, and in addition glass covered peep-holes are located at intervals along the chamber. Means for close adjustment between the speed of extrusion and of the conveyor band, as well as vulcanizing temperature are provided. A cutter provided at the discharge end of the vulcanizing chamber cuts the finishing tubing into the required lengths. The advantages claimed for the new device are: Higher output, less manual labor and reduced floor space.

*Gummi-Zeitung, July 29, 1932.

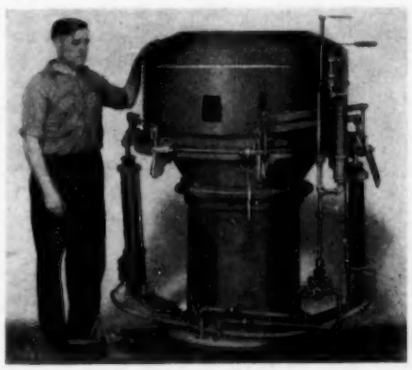
Telescopic Vacuum Expander

EXPANDING drum-built tires by differential air pressure, known in the tire industry as vacuum expansion, is one of the outstanding inventions of John R. Gammeter. In 1925 the vacuum expander was introduced by the Banner Machine Company, now a Division of National Rubber Machinery Company, Akron, O., and between 1925 and 1928 its use was extended to the production of approximately 70 per cent of the tires made in the United States.

The vacuum expander has been continually improved and the National company now presents the Model 32 telescopic vacuum expander which embodies a new principle of operation.

The Model 32 telescopic vacuum expander is particularly suitable for expanding 6.00" tires and larger, and tires having more than six plies. It is intended also for expanding, bagging and curing of single and dual bead truck and bus tires and super balloon tires.

The telescopic action allows full expansion of the tire. Large tires may be more or less "shaped" in the other modern type of National make, Model 2 (fixed chamber) expander, but flaring of beads indicates that the cords have not assumed their natural working positions. Complete expansion of the tire prior to placing it in the mold assures uniformly adjusted cords in positions to act to their fullest efficiency. Easier bagging of the tire is another advantage of this new expander.



The Model 32 expander differs from the Model 2 in the following respects: All of the inside of the tire is exposed to atmospheric pressure, whereas only the tread area contacts with the vacuum chamber of the Model 2 expander. Full exposure to atmospheric pressure allows full expansion of the tire for all cords from bead to bead are free to take their natural working positions.

In the Model 32 expander the vacuum seal is made at the beads which are guarded from contact with the curing bag when it is being forced into the expanded tire.

Stock Preparation

CALENDERS are expensive equipment to purchase, maintain, and operate. In many cases where the requirements of calendered stock are relatively small, tubing machines may be utilized to prepare sheeted stock for such articles as hollow balls, water bottles, syringe bags, etc. This method, which involves running a hollow tube, and slitting it at the tube machine die, and straightening it out flat, produces sheets of variable thickness and width which are free of air blisters and calender grain.—R. R. Olin Laboratories, Akron, Ohio.

EDITORIAL COMMENT

"The Carbon Black Bane"

UNDER the above heading our British contemporary, the *India Rubber Journal,* in a recent issue labors over the fact that although carbon black "has established itself as one of the premier benefactors of the rubber industry," due to the excellent properties it imparts to rubber, it brings with it, "the bane of grime in the buildings in which it is stored, and particularly where it is mixed, being no respector of persons or buildings." Continuing, the article describes how carbon black permeates the atmosphere in mixing rooms, how it settles on mills where light colored stocks are being mixed and how it covers finished sheets of rubber which only show up after cure as a spoiled product through spottings. It concludes with the query, "one wonders if ever a white rival will arise to remove this trouble of the universal mixing shop?"

We believe that the answer is in sight—not, however, with a white rival, but with new blacks which have been recently described in this journal. The new blacks reduce the dusting nuisance to an insignificant amount. Instead of a light flocculent product, the new blacks consist of tiny spheres and which, according to the manufacturers, are "so compact, uniform and geometrically perfect that they are not only dustless, but flow almost like water and can be poured into bags as simply as sand or sugar."

Thus does science rise to meet the troublesome conditions surrounding the compounding problems of the industry.

A Tree That Needs Trimming

THE trend of motor vehicle fatalities might be likened in shape and growth to a fir tree. Back in the early days of the century this tree stuck its head above ground and started shooting upward with almost the speed of Jack's bean stalk. Every year its branches have spread wider and wider until it is casting a shadow over our whole national life. Every year it has been nourished by an ocean of gasoline exploding in the recesses of powerful automobile engines, and warmed by the sun of a complacent public opinion. ***Worn and unsafe tires have contributed much to the growth of this tree.***

No combination of efforts has ever been successful in staying the growth of this tree. For years the American public has half realized that some tree trimming ought to be done but has either tried to do the job with a pocket knife or has decided to "put it off until tomorrow."

Two things have happened to this tree in 1932. First, its nourishment has dwindled—gasoline consumption is down 7 per cent from 1931. Second, the American public has reached for a stout axe and a sharp saw and has started some honest-to-goodness trimming. Government departments and private citizens throughout the country are making a determined application of proven safety measures.

As a result, the 1932 branch of this obnoxious tree will be shorter, less menacing, than the year before—by perhaps 3,000 deaths. But more woodsmen and better tools are needed. Join the tree-trimmers ***by making your tires safe.***

Shop Early and Avoid Accidents

"SHOP Early and Avoid an Accident," is the way the National Safety Council has revised an old slogan in urging the public to hold traffic accidents during the pre-Christmas rush down to a minimum.

Christmas crowds of shoppers add greatly to the congestion in downtown areas, the Council points out, and there is always a rise in pedestrian accidents. Moreover, last-minute shoppers are too hurried to practice safe pedestrianism. A shopper with his arms full of bundles hurrying across a slippery street, is a made-to-order traffic accident victim.

"Take time to be safe" is a particularly fitting slogan at this time of year. It is not only much more convenient but also much safer to get your shopping done early.

The RUBBER AGE

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THE RUBBER AGE is indexed in *Industrial Arts Index*

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

GOODYEAR FACTORIES SET SAFETY RECORD

An average of sixty-three per cent reduction in accidents in seven subsidiary Goodyear Tire and Rubber Company factories for the first ten months of this year as against the similar period for 1931 is announced by the company's safety division.

During October of this year, the entire seven Goodyear factories located at Bowmanville and New Toronto, Canada; Gadsden, Ala.; Los Angeles, Calif.; Wolverhampton, England; Sydney, Australia and Buenos Aires, Argentina, hung up a new record of not a single lost time accident by any employee. The Akron factories had but 17 accidents during that month. A twenty per cent reduction of accidents was effected in 1931 over 1930, at the Akron plants.

Development of safety work and education has been a part of the Goodyear program for a great many years, but organized handling of safety problems was started in 1927.

Each factory is laid out in divisions each of which has a safety committee of foremen as supervisors. This committee carries on educational work with individual workmen and twice a month there is an interchange of departments by foremen for a rigid tour of inspection, the results of which are returned as written suggestions to the safety division.

Reduction of accidents in some months during the year has been as high as sixty-eight per cent in various plants.

Three Goodyear men have been active for a number of years on the National Safety Council including M. H. Kilgore, who has been chairman of the engineering committee, B. F. Gerpheide, chairman of slides and safety kinks committee and J. T. Kidney, a member at large of the rubber section executive committee.

It is an interesting commentary on the safety program that at the Goodyear-Zeppelin airship dock where the *U. S. S. Akron* was built and the *U. S. S. Macon* is being constructed for the Navy there have not been any major accidents. In fact on the construction of the *Macon* there are even fewer accidents than last year.

U. S.-Dunlop Lastex Combine

According to information reaching the local trade from London an agreement has been entered into by the United States Rubber Company and the Dunlop Rubber Company of Great Britain on rubber thread. The Dunlop-Revere Thread Company has been organized to market the products of both concerns in Great Britain and Continental Europe.

The Dunlop-Revere concern will not engage in the manufacture of fabrics or other articles from thread but will handle the interests of both concerns in rubber thread and "latex" thread throughout Europe. Latex thread, marketed in this country by U. S. Rubber Company under the name of "Lastex" is an important new development, announced about a year ago.

Seeks First Car Owner

The management of the Automobile Show, to be held in January under the auspices of the National Automobile Chamber of Commerce, is desirous of ascertaining who first owned and drove an American-made automobile in the streets of New York. If that individual is not living, it is then desired to learn the identity of the first New York owner-driver who *is* living today.

In view of the fact that such a person certainly is deserving of recognition for having pioneered some thirty-odd years ago, the National Automobile Show intends to present a handsome gold watch as a long-deferred reward for enterprise, courage, patience, and faith in the future of the automobile. The presentation will take place at the annual Show Banquet on January 10, 1933.

The management fully realizes that several owners may have started at approximately the same time. For this reason, painstaking effort will be made to verify the accuracy, and to obtain reasonable proof, of competitor's statements.

N. Y. Group Meeting, A. C. S.

The New York Group, Rubber Division, A. C. S., will hold their annual Christmas party and mid-winter meeting at the club rooms of the Building Trades Employers' Association, 2 Park Avenue (33rd Street), on the evening of December 14, at 6:30 p. m. An excellent dinner, two technical papers, the election of officers for the ensuing year, and a lavish evening of entertainment and fun have been planned by the committee in charge. The tickets are $2.00 and reservations should be made promptly, through the secretary of the Group, Peter P. Pinto, 250 West 57th Street, New York City.

DOMINION RUBBER CO. HONORS ITS PRESIDENT

Eighteen executive officers and department heads of the Dominion Rubber Company, Ltd., met recently at the Engineers Club, Montreal, Canada, when a complimentary dinner was tendered to the company's president, W. A. Eden, to mark his completion of 25 years of continuous service in the company and to celebrate the 50th anniversary of his birthday.

J. A. Martin, general manager of the Dominion factory at Kitchener, Ontario, acting as chairman, briefly reviewed Mr. Eden's activities in the company, his advancement from a junior clerk's position at the Canian rubber factory to that of president. As a token of the occasion, a sterling silver tray bearing fac-simile signatures of those present was presented to Mr. Eden, the presentation being made by A. D. Thornton.

In acknowledging this presentation, the guest of honor referred to the company's achievements during the past 25 years, to the changes that had taken place, and paid tribute to the loyalty and co-operation on the part of his associates. He spoke hopefully as to the prospects for the future.

Those present to do honor to Mr. Eden included: John Myles, E. J. Dempsey, H. P. Nellis, J. A. Martin, A. Whitehouse, R. Y. Copland, D. A. Fisher, H. R. Nixon, J. M. S. Carroll, W. F. Bilger, E. B. Hopkinson, G R. Beharriell, A. D. Thornton, J. H. Robertson, E. L. Crocker, M. L. Douglas, J. M. Doyle, and C. C. Thackray.

Steps have been taken by the Dominion Rubber Company to wind up two of its subsidiaries—Granby Rubber Company and Merchants Rubber Company. The former is located at Granby, P. Q., and the latter at Kitchener, Ont. Both of these concerns have been inoperative for several years. These subsidiaries are wholly-owned by the parent company.

New Rubber Die Plant

H. H. Buggie and Company recently started operation at 1214 Dorr street, Toledo, O., in the making of rubber printing dies for use in bag and box manufacturing.

The company was incorporated several weeks ago as the H. B. Company, by Horace Buggie, former president of the Dura Company, for many years engaged in the automotive hardware business.

Later the charter of the company was changed to its present name. The company occupies the second floor of the building at 124 Dorr street, Toledo, O.

FIVE-POINT PROGRAM DISCUSSED BY N. T. D. A.

More than 200 tire dealers and manufacturers' representatives attended the convention of the National Tire Dealers Association at Atlanta, November 14-16, and heard the five-plank platform of the association explained. The platform follows:

(1) Discontinuance by manufacturers of the preferred wholesale price list; (2) cancellation by merchandise credit or otherwise of existing direct contracts between tire manufacturers and large users; (3) confining of distribution of standard brand tires through oil companies to passenger car sizes only and then only to distributors as distinguished from producers; (4) discontinuspare tires to manufacturers, and (5) recogance by tire manufacturers of the sale of nition on the part of tire manufacturers generally that special sales campaigns such as free tubes, extra trade-in allowances and so forth are harmful to the dealers.

The sale of tires by oil companies drew a good deal of discussion at the convention, but no practical solution of the question was offered. In the matter of sale of used tires, the dealers generally deprecated resale of extremely worn units, and it was suggested that these be made useless by cutting the beads.

No Change in Tire Prices

Stabilization of tire prices at present levels for some time is seen generally by Akron executives as the period for spring dating business opened with no changes in the lists of the leading makers. Spring-dating period extends from November 15 to May 15 and it is in this time that dealers lay in their stocks for spring business. In order to spread the buying out and tend to eliminate extreme peaks and valleys in production and sales the tire companies guarantee the prices to dealers during this period against decline.

Goodyear Dividend

The quarterly dividend of $1.75 on Goodyear Tire and Rubber Company first preferred stock, declared November 21, will distribute approximately $1,365,731 to shareholders residing mostly in northern Ohio.

Sixty per cent of the first preferred shares are held in Akron, it is estimated. A total of 780,418 shares are outstanding, according to Goodyear records.

The dividend was voted by directors meeting in Cleveland. It is the regular payment on the stock which annually pays $7 a share. The dividend is payable January 1 to stockholders of record December 1.

Dayton Rubber Shows Gain

Unit sales of tires and tubes of the Dayton Rubber Company for the quarter ending January 3 will show a gain over the like period of last year, J. A. MacMillan, president, states.

Sales of fan belts to the motor industry also will be ahead for the quarter, says Mr. MacMillan. Dayton Rubber supplies 85 per cent of the industry with fan belts.

Names in the News

C. B. O'Connor, general sales manager of the tire division, P. J. Kelly, assistant to the general sales manager, P. C. Handerson, director of advertising, and Frank T. Tucker, manager of tire advertising, represented the B. F. Goodrich Company at the 23rd annual convention of the Association of National Advertisers in Atlantic City, November 16th, 17th and 18th. Mr. Kelly, vice-president of the association and former Goodrich advertising manager, presided at one session Thursday on "Selling Problems."

Maurice Salle, chairman of Flertex, manufacturers of rubber brake linings at Neuilly-sur-Seine, France, is visiting this country and will confer with various automobile officials while in Detroit.

Franklin G. Smith, president of the Osborn Manufacturing Company, Cleveland, O., paint brush manufacturers, has been elected president of the Ohio Rubber Company, Willoughby, O., in which concern he has been interested for the past 20 years, having served on the board of directors and as treasurer.

Ward T. Van Orman, pilot for the Goodyear-Zeppelin Corporation, spoke before the East Akron Board of Trade on November 22, in the Goodyear general office.

Paul W. Litchfield, president, and L. E. Judd, director of public relations of the Goodyear Tire and Rubber Company, are en route to the Pacific Coast on a business trip. Phoenix, Arizona, and Los Angeles are their chief points of destination. They expect to be away three weeks.

H. W. Delzell, manager of the technical service division of the B. F. Goodrich Company, talked on "Tire Construction and Testing" at the meeting of the Engineers' Club at Springfield, O., November 17th. He discussed the newest developments in tires, particularly as they effect the engineer, as well as other engineering advancements in the rubber industry.

Frank P. Brown, power plant general foreman of the B. F. Goodrich Company, Akron, O., attended the annual convention of the American Society of Mechanical Engineers in New York City, December 5. Mr. Brown is secretary-treasurer of the Akron section of the A. S. M. E.

J. H. McGill of the factory cost and accounting division, the B. F. Goodrich Company, Akron, O., discussed factory costs at a dinner meeting of the processing division supervisory staff.

Bernard M. Costello, who has been a member of the technical staff of the Pacific Goodrich Rubber Company at Los Angeles, has returned to the technical staff at the Akron Goodrich plant.

George Oenslager, B. F. Goodrich Company research chemist has recently been at Harvard university as a member of a committee which annually makes a survey of the school's chemistry laboratories and methods of instruction.

With Dr. Oenslager on this committee are such well known figures as Brigadier General Amos F. Fries, former head of the U. S. Chemical Warfare Service; Edwin W. Mallinckrodt, head of the huge chemical company bearing his name; A. D. Little, regarded as one of the leading chemical engineering consultants in the world, and many other leaders in the chemistry world.

Dr. Oenslager was recently awarded the Perkin medal for 1933, regarded as one of the outstanding awards in the world of chemistry for his pioneering work on organic accelerators and other chemical research contributions. He will be given the medal at a meeting of scientific societies in New York, January 6.

William F. Kehoe

William F. Kehoe, 52, for 30 years paymaster and employment manager of the Beacon Falls Rubber Shoe Company, Beacon Falls, Conn., died November 19 after an illness of several weeks. When the shoe plant, a subsidiary of the United States Rubber Company, closed two years ago, Mr. Kehoe became employment manager of Sidney Blumenthal and Company, Inc., Shelton, known as The Shelton Looms, which position he held up to the time of his death. He was widely known throughout the rubber industry in the Naugatuck Valley.

John George Tufford

John George Tufford, president of the I. T. S. Rubber Company and inventor of a suction type of rubber heel, died at his home in Elyria, O., November 23, after a brief illness. He was 73 years old.

Formerly a shoemaker at Beamsville, Canada, Mr. Tufford came to Elyria in 1881 and ran a shop of his own. Then he took charge of the repair department of a shoe store. In 1913 he conceived the idea that if the inner surface of a rubber heel were concave, suction would keep the heel, when it was nailed to the shoe, tight against the shoe without cement. He got Carl H. Ingwer and A. G. Smith interested and the three formed the I. T. S. Rubber Company, using the first letter of their last names as the name of the company.

Other Elyrians later bought stock and the company started business in 1915 with $25,000 capital, 70 per cent of the subscribed stock. Before the year was over the balance of the stock was paid out of earnings and a dividend also declared. The earnings exceeded $1,000,000 annually from 1918 to 1921. The business, according to the last report, was still prospering.

Rubber News Around the World

RUBBER FOOTWEAR TRADE FROM BRITISH MALAYA

The rapid development of British Malayan rubber footwear manufacture, through the efforts of a lone Chinese producer, reached a climax during 1929 when the quantity of exports from that country ranked fourth among world exporters. Since 1929, due entirely to the economic depression, the exports have shown a decline. For the most part these exports were confined to the Orient, and especially the Dutch East Indies and China, where Ian Kah Kee had developed a far-reaching distribution system through the local Chinese merchants, who control retail trade in that section. The extent of this trade with particular markets has been unknown until now, when statistics showing exports from British Malaya by countries has become available.

Exports of canvas rubber-soled footwear from Malaya totalled the huge figure of 536,803 dozen pairs in 1929; 285,435 dozen pairs in 1930 and dropped to 218,861 dozen pairs in 1931. For the first six months of the current year the total was 107,764 dozen pairs.

Norwegian Factories Merge

Negotiations have been going on for some time between two Norwegian rubber factories, Askim Gummivarefabrik A/S and Den Norske Galosche and Gummivarefabrik, Mjondalen, to arrange a joint company in order to develop new rubber products which can compete with foreign goods. According to reports of the Department of Commerce, the final arrangement between the two companies has now been announced. The Askim Company takes over the one at Mjondalen under one management but there is no thought of closing either factory. It is not anticipated that these two factories will attain such a monopoly that prices on rubber goods manufactured by them will show any rise.

Statistical Service

The Commercial Research Department of the Rubber Growers' Association, 2 Idol Lane, Ceastcheap, London, E. C., wish to call to the attention of the American rubber trade and industry, the statistical service which they are furnishing monthly in loose-leaf form. Particulars can be had by addressing the Association direct.

The cost of subscription to the service for American firms would be £4 4s. per year.

British Hose Co. Profit

A good recovery in earnings is revealed in the past year's accounts of the British Molded Hose Company, which is controlled by the Electric Hose and Rubber Company, of Wilmington, Del. Against the previous year's loss of £17,118 ($85,590) the company reports a net profit of £76 ($380), which figure, however, includes £1,259 ($6,295) income tax paid and recoverable.

New I. R. I. President

Sir George Beharrell, D.S.O., formerly chairman of the Rubber Growers' Association, London, and for many years identified with the crude rubber industry, has accepted the presidency of the Institution of the Rubber Industry, for the ensuing year, succeeding Mr. Eric Macfayden, who had previously held the office for the past three years.

Leyland & Birmingham Report

The report of the Leyland and Birmingham Rubber Company, England, for the fiscal year to June 30 last, though still below normal, is distinctly satisfactory. Instead of a trading loss of £5,106 there is a trading profit of £24,489; and instead of a net loss of £26,741 there is a net profit of £3,831. But more important than the improvement in profit and loss is the improvement in the balance-sheet. Here the company has been able to repay some £60,000 of its bank loan, which is now reduced to £48,352, and to increase its surplus current assets from £13,000 to £147,000.

The improvement is due partly to repayment to the parent company of amounts due from subsidiaries, and partly to retention in the business of cash profits made during the past year. For example, while £17,404 has been written off for depreciation, new expenditure on properties, plant, etc., was only £3,407, leaving a considerable portion of the depreciation allowance unexpended and still among the current assets. The directors report an improvement in business since the close of the accounts.

A Unique Trade Opportunity

Announcement has been made of the opening of offices in the Chrysler Building, in New York by Amerika-Interessen, Inc., organized as the American unit of A. G. Fuer Amerika-Interssen, now operating in Berlin, Paris and London.

One of the purposes of this organization is to help manufacturers in this country to surmount the tariff barriers in foreign fields which may interfere with export trade. The method of operation is to make available to the manufacturers of one country, devices, processes and patents which have proved successful in other countries. For manufacturers who wish to obtain business abroad, but cannot do so at the present time through export channels, the company negotiates agreements covering production and marketing rights. This is done by issuing licenses on a royalty basis or by the outright sale of the manufacturing and marketing rights for the country involved.

In order to start the Amreican company, about 100 devices that seem suitable for immediate exploitation in this country have been brought from abroad and it is hoped that many American developments will be, in turn, successfully handled in Europe.

RUBBER PRODUCTION COSTS MUCH LOWER

In view of rubber values remaining steady at about 3½ cents (approximately 2⅓d) per pound, it may be worth while considering the possibilities as to whether rubber companies can make profits at this figure. As an indication of what can be done the recent report of the Eow Seng Rubber Company may be cited. This plantation is situated in the Krian district of Perak, Federated Malay States. The report gives the f. o. b. cost at 1.91d. per lb. and "all-in" cost 2.52d.; the "all-in" cost is stated by the company to include all expenses, freight, etc., as well as London charges. For the year 1930 the "all-in" cost was 6.92d. The current price of the £1 share is about 2s. 6d., so that with a sale price of 3d. per lb. the shares would yield nearly 10 per cent in dividends.

These figures, if they are a representation of what may be seen in other companies, will give very considerable hope to rubber shareholders, as it will be seen that on a very small advance in rubber they will again be in sight of dividends.

Rubber Estates of Java

The directors of the British Rubber Estates of Java, Ltd., which has an issued capital of £719,866 and debentures outstanding for £120,000, have prepared a reconstruction scheme under which the present company is to be placed in voluntary liquidation and a new one formed to acquire its undertaking and assets and assume all its liabilities. Shareholders in the old company will be entitled to subscribe for one 2s. share in the new company, credited with 1s. 8d. paid-up, for every fully-paid 2s. share held in the old company, the liability of 3d. per share being payable in instalments of 1d. each, spread over a period of sixteen months. Debenture holders are asked to release the old company from all interest up to and including July 1, 1933. In consideration they will receive £110 of 7 per cent convertible debenture stock in the new company in exchange for each £100 of the existing stock, and the redemption price of the stock is to be increased to £110.

New Rubber Roadway Concern

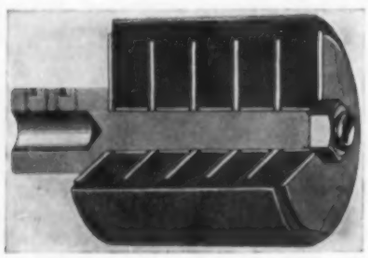
Permanent Roads, Ltd., Broadway Buildings, London, S. W. 1, has been recently formed as a "private" corporation, with a nominal capital of £5,000 in £1 shares. The objects of the company are "to carry on the business of mechanical and construction engineers, manufacturers of steel and rubber roads and pathways, road surfacers, general road constructors, vendors of rubber or other materials suitable in connection with roads, manufacturers and vendors of safety lines, signalling apparatus and devices of all kinds in connection with roads."

Rubber Goods and Specialties

Rubber-Cushioned Sanding Drum

Designed to avoid most of the common troubles encountered in small sanding drums, a new rubber-cushion drum marketed by the Delta Manufacturing Company, Milwaukee, Wis., has several unique features.

The ordinary sanding drum, made with a single rubber sleeve extending the full length of the drum, sometimes offers the serious objection that it becomes barrel shaped when compressed to tighten the sanding sleeve. This results in uneven pressure of the sanding surface on the work. In the



new Delta drum, it is claimed that this is avoided by making the rubber cushioning surface in the form of rubber disks, ½ inch thick, each of which can expand independently of all the others, so that the sanding surface of the drum remains parallel.

To insure free movement of the disks on the shaft of the drum, and also to guard against the rubber freezing to the shaft, each disk has a brass bushing fitted to the shaft. Fiber disks separate each rubber disk from its neighbor to insure free expansion. Heavy steel end disks transmit the pressure of the expanding nut to the rubber sections.

Fountain Stamp Pad

The Ault and Wiborg Company, subsidiary of the International Printing Ink Corporation, Cincinnati, has announced a new A. & W. fountain stamp pad with ink reservoir and automatic lid. At a touch of the catch the lid springs open, revealing the pad inked with perfect uniformity throughout its surface.

The container for the pad is made of heavy metal lacquered in the same color as the ink in the pad. A thick rubber base gives protection to the desk top.

Serpentine Toy Balloon

The Oak Rubber Company, Ravenna, O., have introduced a new novelty line of toy balloons, which will blow up in the form of serpentines as shown in the accompany-

ing illustration. When inflated they reach a length of 45 inches and 5 inches in diameter. They are constructed under the Hy-Tex process, characteristic of all Oak balloons.

New Rubber Patents

Eleven patents, assigned to the B. F. Goodrich Company, were issued Tuesday, Nov. 1, by the U. S. Patent Office.

The inventions included: method of making rubber boot by L. H. Burnham; apparatus for molding footwear by W. R. Dow; rubber bearing structure by E. A. Evans; fountain pen by R. T. Griffiths; method of making secondary aromatic amines by P. C. Jones; method of weighing by Enoch Karrer; mold manipulating apparatus by B. G. Kuhne; method of making footwear by P. Y. Smiley; transfer composition by B. S. Taylor & W. N. Jones; expansion joint by W. H. Thompson and A. E. Merrill; rubber composition method of preparation by W. L. Semon.

Hose Coupler

A coupler with automatic check valve and rubber protector for quickly and easily connecting various lengths of hose, has been made a feature of the A. Schrader's Son's line. It is simple to adjust and permits a free flow of air or liquids without chance

for leakage. It also forms a check on the end of the hose when uncoupled. A rubber cover protects the threads of the barrel.

Rubber Bumper Pads

Rubber bumper pads, molded of fresh live rubber, which are bolted to the bumpers using the regular bumper bolts, are being offered by Fowler and Union Horse Nail Company, of Buffalo. They are made for the Ford, Chevrolet, Plymouth and other cars. They eliminate marring and scratching of bumpers and are an important safety factor, it is stated.

Rubber Milk Bottle Lip

A new sanitary rubber milk bottle lip to facilitate pouring milk from bottles will soon be on the market, according to Joseph B. Englert of 331 Parkwood avenue, Akron, O., inventor.

The lip fits over the neck of the bottle. It consists of a rubber peak through which the milk pours, and is "guaranteed to prevent spilling."

Safer Football Equipment

As a step toward making football even safer for the player, and lessening any danger of injuries, the Wilson-Western Sporting Goods Company, Chicago, has introduced a new type of football equipment to be known as the Wilson "Neuro" jersey, Wilson Neuro pad and Wilson Neuro jacket. These new items are reported to have received the

commendation of many football coaches and players, and also of doctors. The protective measures are based on the fact that severe injuries mostly are caused by certain kinds of shocks on the nervous system, transmitted from the point of contact to these centers of the body.

Protection has been given to these vital centers. It was felt that the football player has never been sufficiently protected from that point at the top of his pants to the lower edge of the shoulder pad. This center has been the point where many injuries have originated. The Wilson Neuro equipment protects this point with a long strip of carefully constructed fiber board, stitched to felt, which goes clear down to the coccyx region—or tail bone—and extends up to the fiber board enveloped within two layers of felt just at the top of the shoulder line.

In the Wilson Neuro jacket the pulling and tugging of a perspiring jersey is eliminated. In the Neuro jersey the features of present equipment are retailed and the protective features added. In both, colors are available, as in the regular lines.

Spalding "Top-Flite" Golf Ball

The Spalding "Top-Flite" golf ball represents a new departure in golf ball refinement. This golf ball features the new Spalding paintless polished cover, a smooth surface and true to the mold from which it came. There is no paint, varnish, enamel or lacquer to scuff off and affect the accuracy of the ball. The finish is claimed to outlast a painted surface and retain its lustrous appearance through a surprising amount of play.

Rotax Electric Controller

"Rotax" stands for Rotating Contacts. These commutator type contacts are the outstanding features of the new electrically operated control instrument developed recently by the Foxboro Company, of Foxboro, Mass.

It is claimed by the manufacturers that the commutator type contact gives more accurate control; that it allows uninterrupted pen travel; that it gives positive contact at all times with a minimum of arcing and that it can be set from outside the case.

"Rotax" is used to control temperature, pressure, humidity, flow, or liquid level and

to give audible or visible signals. It is designed to operate valves, compressors, blowers, motors, heating units of all kinds, horns, lights and other electrical equipment. It has a wide variety of industrial applications.

The instrument is so designed that it is possible to use a simple, positive lock-up type of relay in the circuit. The contacts carry only the relay load. Flexibility of design permits various combinations of commutators so that special signalling or control problems may be met. If it is desirable to control time, a special time cycle feature may be added.

Motorcycle Racing Films

A new and entertaining film, taken by the Goodyear Tire and Rubber Company, featuring many famous riders at the Jack Pines Motorcycle Endurance Run at Lansing, Mich., September 4 and 5, is now available for the use of motorcycle clubs and other organizations interested in motorcycling, without charge except for transportation costs, according to announcement today by the American Motorcycle Association, 252 N. High Street, Columbus, O. Available also is last year's picture, "Thrills and Spills," showing hectic moments at the national hill climb races at Rochester and Syracuse.

Chrome Plated Molds

Increased activity in the production of chrome plated mechanical molds is reported at the Akron, O., division of the National Sherardizing and Machine Company, Hartford, Conn., according to A. F. Schoen, president, who founded the business in 1910.

Molds now being produced cover a wide range, including heel, nipple, toy, V-belt and water-bottle types, Mr. Schoen said, explaining that the increase in production was due to realization by rubber manufacturers of the practicability of chromium plating for mold purposes.

Years of experimentation have proven the value of chrome-plated molds, Mr. Schoen told a representative of THE RUBBER AGE, listing among their advantages quick release of casts without use of "dope," high reflectivity, lack of discoloration, and no loss of production time due to need of burning or scraping to clean the molds.

Rubber Stock Quotations

	Last Price Dec. 5	Nov. 18	—1932— High	Low
Aetna	1½	1¾	3	1½
American Hard Rubber	—	—	—	—
Faultless	20	22	25	12
Firestone	12⅞	11⅛	18½	10⅜
do. 6% pfd.	63½	61½	68	45½
Fisk	⅛	⅛	¾	⅛
do. 1st pfd.	¼	½	2⅜	¼
General	30—	29—	45—	25
do. pfd.	—	—	—	—
Goodrich	5	5⅜	12⅜	2¼
do. pfd.	12⅜	18½	33	7
Goodyear	13⅞	16¼	29¾	5½
do. 1st pfd.	—	40	69½	19¾
India	3½	4½	7	½
Kelly Springfield	—	1	2⅞	½
8% certfs. pfd.	14	15½	24	7
Lee	5	5½	7⅞	2
Mohawk	—	2	4	1
do. pfd.	—	20	—	—
Norwalk	1½	1¼	2½	⅝
Pirelli	30½	29⅝	31¾	21
Raybestos-Manhattan	7¼	7¼	12¾	4⅞
Seiberling	2¼	2⅜	4½	1
do. pfd.	—	14¾	22	7
Thermoid	1⅞	2	4	⅞
U. S. Rubber	4⅛	5⅛	10¼	1¼
do. pfd.	8	9⅛	20¾	3¾

Crude Rubber Movements

Of the 37,931 tons of crude rubber exported from British Malaya during October, 21,042 tons were sent to the United States, as compared with 22,387 tons in September, and 32,872 tons during October, 1931, according to a summary of the October rubber movement published by the Rubber Exchange of New York.

Smaller quantities also were exported to the United Kingdom and Japan, and larger totals to the Continent.

Japan's takings of rubber during the first ten months of the year disclose a notable increase over former years, the total for 1932 so far being 32,483 tons, compared with 26,247 tons for the same time in 1931, and 21,563 tons in the ten months of 1930.

Ten months' shipments from Malaya to the United States amount to 233,895 tons this year, and 287,248 tons last year. Gross exports to all countries in the same period, 398,046 tons as against 435,987 tons during the ten months of 1931.

British Toy Balloon Plant

A toy balloon factory which will eventually employ about 300 people is to be started at Eastwood, about 40 miles from London. It is hoped to start manufacturing by March. The directors are local men. The goods will be produced on mass production principles and three shifts will be worked.

CLASSIFIED ADVERTISING

Five cents a word, minimum charge $2.00, payable in advance.
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THE RUBBER AGE
250 West 57th St., New York City

HELP WANTED

IMPORTANT French Brake Lining manufacturer wishes cooperation of Engineer well acquainted with brake lining, woven and molded, and also with impregnation. A New York interview will eventually be granted. Address Box 683, THE RUBBER AGE.

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Many good Technical Men are available now . . . . . .

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, DECEMBER 5, 1932

Crude Rubber

A LOW consumption figure for domestic factories during October and no perceptible diminution in imports from the Far East makes the statistical position so top heavy that no advance in price levels can be logically expected. The consumption of rubber in the United States in October was the lowest since March, 1923. Arrivals of raw rubber brought the stocks on hand to a record high total—making it impossible to improve the financial position of rubber for some time to come.

The market has been relatively firm during the fortnight, at around 3¼ cents, but buying interest, even at this attractive figure, has been lacking. Transactions on the Rubber Exchange have also registered a dull tone.

Late prices on the New York outside market were recorded as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot-Dec.	.03 3/16	@	.03 5/16
Jan.-Mar.	—	@	.03 7/16
First Latex, crepe spot	—	@	.04⅛
Amber Crepe, No. 2	—	@	.03 1/16
Amber Crepe, No. 3	—	@	.03
Amber Crepe, No. 4	—	@	.02⅞
Brown Crepe, Clean thin	—	@	03
Brown Crepe, rolled	—	@	.02 11/16
Latex—			
Liquid Latex, per gal.	.70	@	.75
Paras—			
Up-river, fine	.07	@	.07⅛
Up-river, coarse	Nominal		
Acre, Bolivian, fine	.07½	@	.07¾
Caucho Ball, Upper	—	@	.03
Centrals—			
Central scrap	.04	@	—
Esmeraldas	.04	@	—
Balata—			
Block, Ciudad	—	@	.18

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers

Dec.	2 19/32	@	2⅝d
Jan.-Mar.	2⅝	@	2 21/32d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers

Spot	—	@	2¼d

Reclaimed Rubber

No change has been recorded in the price levels for reclaimed rubber during the last two weeks. Manufacturers still claim that prices are at a irreducible minimum. The encouraging factor in the reclaimed market is the fact that the percentage of reclaimed to crude last month rose in spite of higher prices as against the raw commodity. Late prices for standard reclaim qualities follow:

High Tensile				
High Tensile Red	lb.	.04¾	@	.05
Super-Reclaim Black	lb.	.05	@	.05¼
Shoe				
Washed	lb.	.05½	@	.05¾
Tube				
No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04¾
Tires				
Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05½	@	.06
White	lb.	.05½	@	.05¾
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½
Miscellaneous				
Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

With the renewed activities in reclaiming plants the scrap market has shown something of a revival. While no advance has been made in price levels over the fortnight for standard grades of scrap, the fact that the reclaiming market is holding up so well is an encouragement. Late quotations follow:

(Prices to Consumer)

Auto tire peelings	ton	16.00	@	18.00
Mixed auto	ton	6.50	@	7.50
Clean solid truck tires	ton	24.00	@	27.50
Boots and shoes	ton	15.00	@	17.50
Arctics, untrimmed	ton	10.00	@	12.50
Inner tubes, No. 1	lb.	.02	@	.02¼
Inner tubes, No. 2, compounded	lb.	.01¼	@	.01⅝
Inner Tubes, Red	lb.	.01⅝	@	.01½

Cotton

PRICE levels have shown a decline over the fortnight but not sufficient to effect the fabricated materials. In fact the price of raw cotton is so low at the present time that little influence can be made on textiles, considering costs of production. The prevailing low levels should be attractive from a price point of view, taking the long angle, but they are not economically helpful under the circumstances. Prevalent low prices for raw commodities are bound to react on the tire fabric prices—but to the point where prices are not commensurate with production costs.

High, low and closing prices on the New York Cotton Exchange as of December 3, were as follows:

	Dec. 3			Nov. 18
	High	Low	Close	Close
Dec.	5.65	5.58	5.60	6.28
Jan.	5.65	5.60	5.60	6.34
Mar.	5.76	5.72	5.72	—

Tire Fabrics

A certain shading of prices for large orders was the only deviation from the prices reported two weeks ago on tire fabrics. Only hand-to-mouth orders were recorded and little buying interest was in evidence. Late quotations on the more popular grades were as follows:

(Prices Net at the Mill)

CORD				
Peeler, carded, 23/4/3	lb.	.22	@	.22½
Peeler, carded, 23/5/3	lb.	.21	@	.21¼
Peeler, carded, 13/3/3	lb.	.18	@	.18¼
Peeler, carded, 15/3/3	lb.	.19	@	.19¼
Egyptian, carded, 23/5/3	lb.	.34½	@	.35
Egyptian, combed, 23/5/3	lb.	.39½	@	.40
CHAFERS				
Carded, American, 8 oz.	lb.	.18	@	.18½
Carded, American, 10 oz.	lb.	.18	@	.18½
Carded, American, 12 oz.	lb.	.18	@	.18½
Carded, American, 14 oz.	lb.	.17½	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.21
Carded, American, 10¼ oz.	lb.	.18	@	.21
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.21	@	.21¼
Carded, American, 17¼ oz. 10-5 ply	lb.	.17	@	.17½

Sheetings

Prices on sheetings dropped during the fortnight, in sympathy with raw cotton figures. The latest prices for the leading sheeting constructions used in the industry follow:

40 inch, 2.50 yard	yd.	—	@	.05⅝
40 inch, 2.85 yard	yd.	.04⅝	@	.04¾
40 inch, 3.15 yard	yd.	—	@	.04¾
40 inch, 3.60 yard	yd.	—	@	.04⅝
40 inch, 3.75 yard	yd.	.03⅝	@	.03¾
40 inch, 4.25 yard	yd.	.03⅝	@	.03¼

Ducks

Enameling	lb.	.18	@	.22
Belting and Hose	lb.	.19	@	.20
Single filling	lb.	.07½	@	.07¾
Double filling	lb.	.09½	@	.10

Closing Prices on Rubber Exchange of New York, Inc.

No 1 Standard Contract of 10 Tons*

FROM NOVEMBER 21 TO DECEMBER 5, 1932

Date	Spot	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Nov. 21	3.40	3.34	3.34	3.41	3.47	3.53	3.56	74
22	3.40	3.33	3.33	3.39	3.45	3.50	3.53	89
23	3.34	3.29	3.29	3.36	3.42	3.48	3.51	82
25	3.32	3.26	3.26	3.32	3.38	3.44	3.47	81
26	3.28	3.27	3.27	3.34	3.40	3.46	3.49	25
28	3.28	—	3.21	3.28	3.34	3.41	3.44	59
29	3.28	—	3.21	3.27	3.34	3.40	3.43	46
30	3.31	—	3.24	3.30	3.35	3.41	3.44	15
Dec. 1	3.35	—	3.29	3.34	3.39	3.44	3.47	39
2	3.28	—	3.22	3.28	3.33	3.38	3.41	69
3	3.25	—	3.17	3.23	3.28	3.33	3.36	54
5	3.22	—	3.15	3.21	3.26	3.31	3.34	32

*This contract will be superseded by "No. 1 B Standard" on April 1, 1933

CHEMICALS

THERE has been no price changes reported for rubber chemicals during the last fortnight. With curtailed production schedules and hand-to-mouth buying the prospects have not greatly improved but there is an optimism in the trade that the worst has past and that rubber factories will have to increase output to meet replacement demands within a few weeks. Late quotations on the general list of rubber chemicals are reported as follows:

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
A-32	lb.	.80	@	.95
Aldehyde ammonia, crystals	lb.	.65	@	.67
Altax	lb.			
Captax	lb.			
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.43
Diphenylguanidine	lb.	.33	@	.34
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.37½	@	.42
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.46	@	.47
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.37½	@	.40
Monex	lb.	3.25	@	—
Oxynone	lb.	.68	@	.80
Phenex	lb.	.50	@	.55
R & H 40	lb.	.40	@	.41
R & H 50	lb.	.40	@	.41
R-2	lb.	1.95	@	2.15
Safex	lb.	1.20	@	1.25
SPDX	lb.	.75	@	—
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Thiocarbanilid, drums	lb.	.25	@	.27
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.60
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z-88-P	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Litharge, domestic	lb.	.05¾	@	—
Magnesia, calcined, light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)

Blues				
Prussian	lb.	.36	@	.37
Ultramarine	lb.	.06	@	.30
Browns				
Sienna, Italian	lb.	.04	@	.08
Umber, Turkey	lb.	.04	@	.06
Greens				
Chrome, light	lb.	.23	@	.25
medium	lb.	.26	@	.28
dark	lb.	.28	@	.33
Chromium Oxide, bbl.	lb.	.23	@	.27
Reds				
Antimony				
crimson, 15/7	lb.	.40	@	—
sulfur, free	lb.	.52	@	.56
Indian English	lb.	.09	@	.10
Domestic (Maroon)	lb.	.11	@	—
Red oxide, pure	lb.	.10	@	.12
Rub-Er-Red, f.o.b. Easton	lb.	.08½	@	—
Whites				
Lithopone, Albalith	lb.	.04½	@	.04¾
Lithopone, Azolith	lb.	.04½	@	.04¾
Titanium oxide	lb.	.17	@	.19
Titanox B	lb.	.06	@	.06½
Titanox C	lb.	.06	@	.06½
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.05¾	@	.06
ZZ (leaded)	lb.	.05½	@	.05¾
Horsehead Lead Free Brand:				
Selected	lb.	.05¾	@	.06
Special	lb.	.05¾	@	.06
XX Red	lb.	.05¾	@	.06
XX	lb.	.05¾	@	.06
XX Green	lb.	.05¾	@	.06
Leaded Brand, Standard	lb.	.05½	@	.05¾
Sterling	lb.	.05½	@	.05¾
Superior	lb.	.05½	@	.05¾
Lehigh	lb.	.05¼	@	.05½
U. S. P., bbls.	lb.	—	@	.12¾
Kadox, black label	lb.	.09⅝	@	.09⅞
Blue label	lb.	.08⅝	@	.08⅞
Red label	lb.	.07¼	@	.07½
Cryptone, No. 19	lb.	.06½	@	.06¾
Cryptone CB, No. 21	lb.	.06½	@	.06¾
XX Zinc Sulphide, bbls.	lb.	—	@	.13
St. Joe, black label	lb.	.05¾	@	.06
green label	lb.	.05¾	@	.06
red label	lb.	.05¾	@	.06
Zinc Oxide—French Process				
Anaconda, lead free	lb.	.05¾	@	.06
Anaconda, selected lead free	lb.	.06¼	@	.06½
Florence White seal, bbls.	lb.	—	@	.10⅞
Green seal	lb.	.09⅝	@	.09⅞
Red seal	lb.	.08⅝	@	.08⅞
Yellows				
Chrome	lb.	.16	@	.16½
Ocher, dom. med.	lb.	.01½	@	.02

BLACKS

Arrow "Aerfloted"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03	@	—
Bone, powdered	lb.	.05½	@	.12½
Carbon, compressed	lb.	.02¾	@	.07
uncompressed	lb.	.02¾	@	.07
"Certified," Cabot				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Disperso" f.o.b. La.	lb.	.028	@	.071
f.o.b. Texas	lb.	.02¾	@	.07
Drop, bbls.	lb.	.05½	@	.14
"Excello," compressed	lb.	.03	@	—
"Fumonex"	lb.	.02½	@	.06
"Gastex"	lb.	.02½	@	.06
Lampblack	lb.	.06	@	.08
"Micronex"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Supreme"	lb.	.02¾	@	—
Thermatomic—"P 33"	lb.	—		—
"Thermax"	lb.	—		—
United, "Dixie" and "Kosmos"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Velvetex"	lb.	.02	@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.10½	@	.12
Asbestine	ton	13.40	@	14.00
Barium carbonate (98-100%)	lb.	.05	@	—
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	33.00	@	—
Basofor	lb.	.04½	@	—
Bentonite	lb.	.02	@	.03
Blanc fixe dry f.o.b. works	ton	60.00	@	75.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk, precipitated				
Suprex white, extra lt.	ton	60.00	@	70.00
heavy	ton	45.00	@	55.00
Clay, Kaolin, domestic	ton	6.00	@	7.00
Aerfloted, Suprex	ton	6.50	@	8.00
Congaree	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	10.00	@	22.00
Par	ton			
Tensulite		15.00	@	—
Cotton Flock	lb.	.08	@	.16
Glues, extra white	lb.	.15	@	.22
medium white	lb.	.12	@	.14
Kalite No. 1	ton	30.00	@	55.00
Kalite No. 3	ton	40.00	@	65.00
Magnesia, carbonate	lb.	.05¾	@	.06
Mica	lb.	.04	@	—
Rottonstone (powdered)	ton	23.50	@	28.00
Soapstone, powdered	ton	16.00	@	18.00
Starch, powdered	cwt.	2.34	@	—
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	.85	@	1.10
English cliffstone	cwt.	1.50	@	1.70
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.10½	@	—
Zinc Stearate	lb.	.20½	@	—

MINERAL RUBBER

Genasco (factory	ton	40.00	@	42.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Parmr, solid	ton	23.00	@	28.00
Pioneer, MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hydro-Carbon	ton	27.05	@	29.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66 degrees	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	—	@	.26½
Acids, Fatty				
Laurex	lb.	.15	@	.16
Stearex	lb.	.08	@	.12
Stearic, double pressed	lb.	.08	@	.12
Alkalies				
Caustic soda, 76%	cwt.	2.50	@	2.90
Soda Ash, 58% C.L.	cwt.	1.15	@	1.17½
Oils				
Corn, refined, bbls.	lb.	.05½	@	.06
Cottonseed, crude		.03½	@	.04
Degras (c.l. 100 bbls.)	lb.	.02¾	@	—
Less c.l. (10-25 bbls.)	lb.	.03	@	—
Lots less than 10 bbls.	lb.	.03¼	@	—
Fluxrite	lb.	.05½	@	.06¼
Palm Lagos	lb.	.03¼	@	.03½
Niger	lb.	.02¾	@	.03
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.18	@	.23
Pine, steam distilled	gal.	.59	@	.61
destructively distilled	gal.	.58	@	.62
Witco Palm Oil	lb.	.07½	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.05	@	.06
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	7.00	@	—
Rosin, grade K, 280 lb.	bbl.	4.35	@	—
Pigmentar	gal.	.18	@	.23
Tar Retort, 50 gal.	bbl.	10.00	@	11.00
Solvents				
Acetone, pure	lb.	.10	@	.13
Alcohol, denatured, No. 1 bbls.	gal.	.37	@	.45
Benzol, 90%	gal.	.20	@	.21
Carbon, bisulfide	lb.	.05½	@	.06¼
Carbon, tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.26	@	.28
Rub-Sol (f.o.b. Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	.45¼	@	—
wood	gal.	—	@	.40
destructively distilled	gal.	.35	@	—
Waxes				
Beeswax, white	lb.	.30	@	.32
Carnauba	lb.	.25	@	.26
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.05	@	.06
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Paraffin (c.l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.02	@	—
White crude scale 124/126	lb.	.02	@	—
Refined, 125/127	lb.	.02¾	@	—
Refined, 128/130	lb.	.03¼	@	—
Refined, 135/137	lb.	.04	@	—
Refined, 138/140	lb.	.06¾	@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.			
Powder	lb.			
Resin	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Retardex	lb.	.35	@	.40
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.66

SPECIALTIES

Aromatics—Rodo	lb.			
Sunproof	lb.	.35	@	.37½
Sponge Paste	lb.	—	@	.30
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.06	@	.08
White	lb.	.08	@	.12
Brown	lb.	.07	@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04	@	—
Sulfur flour,				
Ref'n'd, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags	cwt.	1.75	@	2.10
Telloy	lb.			
Vandex	lb.			

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THERE has been no improvement in the statistical position of crude rubber during the last two weeks. Stocks are still at a record high, while consumption for October dropped to the lowest record since 1923. Shipments from the Far East continue surprisingly high in spite of the prevailing low price levels for the commodity.

Prices have remained constant for crude rubber and have hung around 3½ cents for the fortnight. Little interest is evidenced in the markets and trading on the Rubber Exchange have been particularly dull.

The disappointing production figure for tires and tubes in September and the corresponding decline in automobile production has been far from encouraging.

The only encouraging signs in the situation are the slow but steady decline in British stocks and the apparent increase in the reclaimed rubber business. As regards the latter, production has increased and the percentage of reclaimed used to crude has risen to 26.1.

Total consumption of crude rubber for the year will probably not exceed 320,000 tons.

Latest figures covering imports and exports of crude rubber from the leading producers and consuming centers have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,572	7.42	471,543
1931:							
Jan.	36,307	7,190,591	8.84	1,706	350,480	9.17	34,601
Feb.	34,005	6,564,969	8.62	1,799	357,073	8.86	32,206
Mar.	40,393	7,356,505	8.13	2,800	534,180	8.52	37,593
Apr.	44,536	7,712,941	7.73	2,607	528,947	9.06	41,929
May	35,526	5,886,638	7.40	2,501	418,301	7.47	33,025
June	46,233	6,918,900	6.63	2,749	440,604	7.15	43,484
July	43,469	6,023,743	6.19	1,435	223,587	6.96	42,034
Aug.	38,669	5,138,404	5.93	2,324	345,953	6.65	36,345
Sept.	38,494	4,970,324	5.76	1,362	187,431	6.14	37,132
Oct.	41,131	4,803,582	5.21	1,527	203,574	5.95	39,604
Nov.	43,345	4,742,218	4.72	1,403	198,284	6.31	43,435
Dec.	53,536	5,610,129	4.68	2,462	326,382	5.91	51,070
1932:							
Jan.	33,221	3,387,505	4.55	1,524	185,466	5.43	31,697
Feb.	27,959	2,690,250	4.29	1,915	222,584	5.19	26,044
Mar.	45,197	4,251,801	4.19	2,227	240,128	4.84	42,970
April	37,903	3,181,343	3.74	2,128	196,934	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,803	2,647,085	2.89	1,981	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1925	1926	1927	1928	1929	1930	1931	1932
Jan.	29,638	32,196	31,518	34,403	43,002	36,194	28,557	27,962
Feb.	29,761	31,136	30,137	33,702	41,594	33,302	28,797	30,011
Mar.	33,498	32,936	36,141	35,688	44,730	35,540	32,788	27,828
Apr.	34,139	32,696	35,871	32,772	47,521	39,686	33,321	25,953
May	35,322	29,364	34,592	37,333	49,233	39,386	37,817	29,197
June	35,822	28,598	33,801	37,676	43,227	34,195	37,916	39,116
July	36,053	27,577	29,219	37,407	41,526	29,508	31,937	28,272
Aug.	35,909	34,533	33,460	42,927	38,274	30,850	27,586	22,372
Sept.	31,691	32,904	27,214	39,882	34,707	25,515	23,638	22,491
Oct.	29,047	29,936	26,790	40,857	34,800	27,516	22,277	21,018
Nov.	28,253	28,080	26,792	37,461	27,659	23,691	22,943	—
Dec.	28,748	26,293	25,492	31,232	23,531	21,687	21,409	—
Totals	388,481	366,149	371,027	441,340	469,804	375,980	343,986	—

Figures on Quarterly Basis

Quarter	1925	1926	1927	1928	1929	1930	1931	1932
Jan./Mar.	95,263	94,301	99,216	103,558	128,565	101,610	89,652	85,309
Apr./June	104,099	87,109	103,242	103,500	139,292	112,229	107,755	92,643
July/Sept.	99,493	93,793	89,210	117,573	113,746	85,261	83,632	72,523
Oct./Dec.	85,789	83,212	80,860	117,597	84,872	72,020	65,645	—
Totals	384,644	358,415	372,528	442,227	466,475	371,120	346,684	—

Note—The Rubber Association estimates its monthly rubber consumption figues to be 80 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1930	1931	1932		1930	1931	1932
January	25,731	26,844	26,845	July	38,256	39,459	31,317
February	26,509	26,133	25,344	August	37,433	39,459	35,207
March	31,029	31,037	29,451	September	37,823	36,670	33,645
April	34,549	33,400	30,252	October	32,267	35,051	—
May	36,497	35,716	31,574	November	30,984	30,640	—
June	35,902	38,375	38,766	December	29,094	30,529	—

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1930																																
July	12¼	12¼	12	—	—	—	12	11⅞	11⅝	11⅝	11⅝	11¾	—	11¾	11¾	11¾	11⅛	10⅝	10⅝	9¾	10⅝	11⅛	10⅝	10⅝	10⅝	10⅝	—	10⅝	10⅝	10½	11¼
August	10⅝	10⅝	—	10⅛	10½	10½	10¼	10¼	10¼	10⅛	10	9⅞	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9½	9¾	9⅝	9¾	8	9¾	9¾	9¾	9¾	9¾	9¾	—	10	8¼
September	9⅝	—	9⅝	9⅝	9	8½	—	8	8⅛	8⅛	8	8¼	8¼	8	8	8	8	8⅝	8	8	8⅝	8⅛	8	8⅝	8⅝	8⅝	8⅝	8⅝	7⅞	8⅛	8	8⅛
October	7½	—	7½	8¼	8	—	8	8	8	7⅞	8	8	7⅝	7⅝	8	8	7⅞	7⅞	7⅞	8	8	8	8	7¾	7¾	7¾	8	8	8	8	—	8
November	8¼	—	8¼	8¼	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	8⅜	7⅞	8⅜
December	9½	—	9½	9¼	9¼	9¼	—	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	—	9	9	8⅝	9	9⅜	8⅝	9	9¼	8½	8⅝	8½	8½	8½	8½	8½	8½	—	9
1931																																
January	—	—	8⅝	8⅜	—	8½	8⅜	8⅜	8⅜	8⅜	—	8⅜	8⅜	8⅜	8½	8⅜	8⅜	—	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	—	8⅜
February	—	—	7¾	7⅞	—	7⅝	7¾	—	—	7⅞	7⅞	—	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	—	7⅞
March	—	—	7¾	8¼	—	8¼	8¼	—	—	8	8	8	8	8	8	8	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7¾	7	7	7	7	—	7⅞
April	6⅝	6⅝	—	—	6⅛	6⅛	6⅛	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6½	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	—	6⅜
May	6	6	—	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛	—	6⅛
June	6⅝	6⅝	—	6⅝	6⅝	6½	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	—	6⅝
July	6⅝	6⅝	—	6⅝	6⅝	6½	6½	6½	6½	6½	6½	6½	6⅝	6½	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	—	6⅝
August	5¾	5¾	—	5¾	5¾	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	—	5½
September	5¾	5¾	—	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	—	5⅝
October	4¾	4¾	—	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	—	4⅝
November	4½	4½	—	4½	4½	4½	—	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	—	4½
December	4⅜	4⅜	—	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	—	4⅜
1932																																
January	—	—	4⅜	4⅜	—	4½	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	—	4⅜
February	4⅜	4⅜	—	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	—	4¼
March	3½	3½	—	3½	3½	3½	—	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	—	3½
April	3	3	—	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	—	3
May	3	3	—	3¼	3¼	3¼	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	—	4
June	2¾	2¾	—	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	—	2¾
July	3¼	3¼	—	3¼	3¼	3¼	3¼	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	—	3½
August	4¼	4¼	—	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	—	4⅛
September	—	—	3⅝	3⅝	—	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	—	3⅝
October	3⅜	—	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜
November	3⅞	—	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	—	3⅞
December	3 7/16	—	3 7/16	3 7/16	3 7/16	3 9/16	—	3 9/16	3 9/16	3 9/16	—	3 9/16	3 9/16	—	3 9/16	3 9/16	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	—	3½

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1925

Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45
1912	121.60	1916	72.50	1920	36.30	1924	26.20
1913	82.04	1917	72.23	1921	16.36	1925	72.46

Average Monthly Price per Pound Since 1926

Month	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	79.50	38.75	40.25	20.14	15.24	8.34	4.38
Feb.	62.25	38.25	32.75	23.97	15.85	7.70	4.03
Mar.	59.00	41.04	26.82	24.55	15.34	7.71	3.35
Apr.	51.25	40.86	18.97	21.18	14.93	6.43	3.02
May	47.75	40.76	18.99	21.46	14.24	6.49	3.09
June	42.50	37.25	19.59	20.64	12.45	6.35	2.66
July	41.03	34.87	19.40	21.30	11.24	6.37	2.89
Aug.	48.50	35.12	19.46	20.59	9.96	5.38	3.63
Sept.	41.00	33.67	18.47	20.37	8.28	5.08	3.84
Oct.	42.50	34.32	18.83	19.67	8.20	4.87	3.65
Nov.	38.50	37.58	18.26	16.62	9.01	4.65	3.44
Dec.	38.25	40.63	17.97	16.12	9.05	4.64	—
Average for Year	48.50	37.72	22.48	20.55	11.98	6.17	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Aug.	Sept.	Oct.	Nov.	Day	Aug.	Sept.	Oct.	Nov.
1	—	2⅞	2⅝	2 15/32	17	2 7/16	2 17/32	2 5/16	2 9/16
2	2⅛	2 27/32	—	2 7/16	18	2⅝	—	2 11/32	2 17/32
3	2 3/16	3 1/32	2½	2 15/32	19	2 7/16	2 7/16	2⅝	2 9/16
4	2¼	—	2½	2 17/32	20	2 7/16	2⅝	2 7/16	—
5	2¼	3 1/16	2 15/32	2 19/32	21	—	2 9/16	2 7/16	2 19/32
6	2 5/32	3 11/32	2 5/32	—	22	2 13/32	2 11/16	2 7/16	2 19/32
7	—	3	2 15/32	2 21/32	23	2 15/32	2 21/32	—	2 19/32
8	2 9/93	2 15/16	2 15/32	2 21/32	24	2½	2 23/32	2 7/16	2 19/32
9	2¼	2⅞	—	2⅝	25	2 11/16	—	2½	2 19/32
10	2 5/16	2¾	2 7/16	2 19/32	26	2 21/32	2¾	2½	2⅝
11	2 7/16	—	2 13/32	2 21/32	27	2 21/32	2 19/32	2½	—
12	2⅝	2 11/16	2 7/16	2 11/16	28	—	2 21/32	2 17/32	2 19/32
13	2⅝	2 19/32	2 13/32	—	29	3 1/32	2 19/32	2 9/16	2 23/32
14	—	2 23/32	2 13/32	2 19/32	30	3 1/32	2⅝	—	2 19/32
15	2 7/16	2 17/32	2 13/32	2 19/32	31	2 29/32	—	2½	—
16	2½	2 19/32	—	2 19/32					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence	Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence
Jan.	9.942	7.471	4.160	3.052	Aug.	10.505	4.880	2.385	2.654
Feb.	11.875	7.948	3.823	2.760	Sept.	10.160	4.075	2.524	2.485
Mar.	12.135	7.595	3.822	2.047	Oct.	9.620	4.023	2.898	2.425
Apr.	10.490	7.391	3.082	1.876	Nov.	8.442	4.440	2.890	2.518
May	10.717	6.926	3.035	1.825	Dec.	7.958	4.516	3.115	—
June	10.580	6.195	3.082	1.750	Average for				
July	11065	5.648	3.048	1.875	Year	10.291	5.926	3.155	—

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Sept.	Oct.	Nov.	Day of Month	Sept.	Oct.	Nov.	Day of Month	Sept.	Oct.	Nov.
1	8.30	7.05	6.10	11	—	—	6.70	21	7.50	6.30	6.15
2	8.75	—	6.10	12	7.75	—	6.55	22	7.55	6.25	6.15
3	8.90	7.15	6.10	13	7.40	6.45	—	23	7.35	—	6.05
4	—	7.15	6.20	14	7.25	6.55	6.40	24	7.45	6.20	—
5	—	7.10	6.45	15	7.25	6.50	6.40	25	—	6.25	5.90
6	8.95	7.05	—	16	7.05	—	6.40	26	7.50	6.40	5.90
7	7.00	7.05	6.30	17	6.80	6.35	6.40	27	7.50	6.45	—
8	7.95	6.65	—	18	—	6.35	6.35	28	7.40	6.35	5.80
9	8.10	—	6.15	19	6.90	6.45	6.25	29	7.00	6.20	6.00
10	8.10	6.45	6.45	20	6.95	6.35	—	30	7.25	—	5.95
								31	—	6.15	—

Average Monthly Price Per Pound

	1929 Cents	1930 Cents	1931 Cents	1932 Cents		1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	20.22	17.21	10.27	6.65	Aug.	18.62	12.03	7.21	7.43
Feb.	20.21	15.62	10.96	6.85	Sept.	18.83	10.85	6.52	7.68
Mar.	20.19	15.13	10.90	6.86	Oct.	18.46	10.63	6.32	6.30
Apr.	20.29	16.39	10.19	6.16	Nov.	17.53	10.96	6.44	6.22
May	19.41	16.43	9.38	5.72	Dec.	17.28	10.02	6.24	—
June	18.74	14.48	9.05	5.22	Average for				
July	18.62	13.10	9.28	5.87	Year	19.03	13.57	8.56	—

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	131,744	209,487	322,860	61,863	56,187	42,234	193,607	265,674	365,094
Feb.	143,863	212,833	322,117	63,404	63,680	51,728	207,267	276,513	373,845
Mar.	141,843	217,804	334,566	63,646	63,133	44,190	205,489	280,937	378,756
Apr.	148,272	228,382	343,090	63,261	56,700	40,387	211,533	285,082	383,486
May	146,149	220,799	346,231	63,168	73,564	50,453	214,347	294,363	396,684
June	151,551	225,536	345,702	58,657	69,421	43,079	210,209	294,957	388,781
July	152,001	234,822	345,927	58,326	66,873	37,894	210,327	301,695	383,821
Aug.	158,604	240,816	357,342	61,168	61,469	41,282	219,772	302,285	398,624
Sept.	169,927	254,324	365,789	60,923	62,420	46,188	230,851	316,744	411,977
Oct.	185,470	273,456	373,823	51,122	68,427	40,176	236,593	341,883	413,999
Nov.	189,925	292,493	——	52,538	77,443	——	242,463	369,936	——
Dec.	200,998	322,826	——	56,035	53,940	——	257,033	376,766	——

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1930	1931	1932	At end of	1930	1931	1932
Jan.	60,434	81,093	67,166	July	81,048	81,817	48,842
Feb.	64,557	82,265	65,942	Aug.	80,931	81,560	47,079
Mar.	68,923	84,736	64,280	Sept.	83,329	79,692	44,942
Apr.	74,676	86,982	61,848	Oct.	77,647	76,778	42,327
May	77,312	86,726	56,089	Nov.	76,887	73,911	——
June	80,260	83,071	51,009	Dec.	78,013	69,470	——

At End of Recent Weeks

1932	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
January	69,504	68,967	68,272	67,545	67,157
February	67,410	67,824	67,314	65,923	
March	65,459	65,121	65,014	64,461	
April	63,813	64,015	63,717	63,348	61,850
May	61,411	58,101	58,606	56,504	
June	55,535	54,636	52,636	51,785	
July	50,656	50,188	49,327	49,105	48,833
August	48,980	47,713	46,985	47,052	
September	46,982	45,325	46,176	44,986	
October	44,972	44,503	43,729	43,173	42,614
November	42,114	41,528	40,952	41,025	

Stocks in Liverpool

1932				
January	57,718	57,652	58,662	58,328	58,182
February	59,155	59,874	59,514	59,868	
March	60,288	60,776	60,922	60,775	
April	61,010	60,872	61,302	61,433	61,480
May	61,674	60,909	60,583	60,148	
June	60,119	59,551	58,601	58,441	
July	58,569	58,335	57,622	57,618	57,366
August	58,019	57,762	57,542	57,448	
September	58,080	57,965	58,028	58,004	
October	58,261	58,209	57,831	57,568	57,702
November	57,311	57,329	57,021	56,004	

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1929	1930	1931	1932	End of	1929	1930	1931	1932
Jan.	29,617	39,727	48,802	48,350	July	38,859	45,459	51,203	17,017
Feb.	32,378	44,371	49,283	46,964	Aug.	30,834	48,132	48,971	20,649
Mar.	29,437	45,657	49,590	46,591	Sept.	32,138	44,015	47,025	20,415
Apr.	26,474	48,473	45,868	39,663	Oct.	33,770	39,930	52,132	23,158
May	30,764	44,715	44,273	38,690	Nov.	30,963	41,674	46,497	——
June	30,403	42,461	47,517	19,770	Dec.	35,548	45,963	45,795	——

STOCKS IN OTHER CENTRES

End of 1932:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	43,938	19,090	3,065	3,956	6,342
Feb.	43,695	18,920	3,093	3,591	6,641
Mar.	43,329	17,470	3,172	3,172	6,378
Apr.	42,642	15,660	3,404	3,407	6,469
May	41,657	17,870	3,427	3,768	6,438
June	40,184	20,420	3,274	3,727	5,885
July	38,681	21,900	2,996	3,781	5,982
Aug.	38,539	20,000	2,625	3,347	5,829
Sept.	36,346	20,000	2,246	2,834	5,823
Oct.	38,125	02,000			

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	6.6	1927	19,700,003	79.1
1924	21,962,811	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1926	24,199,524	78.8	1930	17,364,096	80.1
1931			1931		
January	681,301	67.9	July	812,642	74.0
February	1,010,774	73.9	August	924,236	80.8
March	1,425,336	81.4	September	504,879	70.4
April	1,717,652	79.9	October	281,749	62.7
May	1,506,349	83.7	November	636,138	78.0
June	1,064,707	77.2	December	714,037	80.1
1932			1932		
January	810,759	89.0	July	338,725	82.2
February	726,172	84.3	August	221,913	53.8
March	642,013	81.6	September	197,999	64.5
April	652,126	69.8	October	237,498	77.7
May	657,995	74.0	November		
June	499,441	82.3	December		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	51,633	60,845	61,237	64,439	77,944	68,726	50,965	48,739
Shipments	50,120	59,262	59,002	64,059	74,296	69,395	53,638	48,151
Inventory[2]	7,427	8,142	10,456	10,264	13,624	11,838	9,003	110,233

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	4,485	3,675	3,462	4,406	3,744	3,253	11,925	8,957	7,912
Feb.	4,555	3,985	3,871	4,195	3,402	2,553	11,410	9,536	9,172
Mar.	4,863	4,663	3,671	4,717	4,122	2,954	12,513	10,014	9,878
Apr.	5,648	4,944	3,517	5,089	4,932	3,698	13,076	10,031	9,846
May	5,717	5,679	3,820	5,216	5,415	4,258	13,432	10,312	9,379
June	5,122	5,672	5,643	5,294	5,572	10,065	13,277	10,447	4,999
July	3,991	4,926	3,617	5,447	5,462	2,404	11,812	9,919	6,208
Aug.	4,166	3,906	3,089	5,175	4,960	2,655	10,848	8,896	6,659
Sept.	3,365	3,172	2,539	4,405	3,932	3,082	9,812	8,158	6,096
Oct.	3,582	2,974	——	3,499	2,852	——	9,803	8,300	——
Nov.	2,654	2,500	——	2,834	2,887	——	9,595	7,919	——
Dec.	2,814	2,643	——	3,361	2,871	——	9,003	7,744	——

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	70,706	82,614	76,618	70,823	80,180	68,829	52,420	48,333
Shipments	68,106	81,004	71,591	72,896	77,127	70,592	54,938	50,021
Inventory[2]	11,052	11,313	16,200	13,692	16,117	12,807	9,999	112,121

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	4,607	3,623	3,308	4,857	4,062	3,529	12,704	9,439	7,719
Feb.	4,634	3,916	3,821	4,337	3,400	2,728	13,036	9,921	8,760
Mar.	4,941	4,450	3,502	4,727	3,789	2,686	13,179	10,475	9,448
Apr.	5,510	4,617	3,225	4,848	4,636	3,385	13,784	10,413	9,441
May	5,535	5,413	3,409	5,074	5,281	3,867	13,852	10,549	8,918
June	4,950	5,358	5,279	5,265	5,397	9,019	13,612	10,504	5,174
July	3,939	4,955	2,937	5,855	5,831	2,160	11,667	9,589	5,975
Aug.	4,796	4,435	2,748	5,762	5,301	2,503	10,737	8,774	6,127
Sept.	3,817	3,449	2,601	4,541	4,150	3,098	10,065	8,095	5,753
Oct.	3,951	3,077	——	3,472	2,813	——	10,517	8,321	——
Nov.	2,680	2,443	——	2,788	2,594	——	10,313	8,119	——
Dec.	3,060	2,597	——	3,412	2,767	——	9,999	7,922	——

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931							
Jan.	171,848	138,317	33,531	6,496	4,552	1,944	178,344
Feb.	219,940	180,419	39,521	9,871	7,529	2,342	229,811
Mar.	276,405	231,244	45,161	12,998	10,488	2,510	289,398
Apr.	336,989	285,693	50,015	17,159	14,043	3,116	354,098
May	317,163	269,420	45,695	12,738	10,621	2,117	329,901
June	250,640	208,158	41,304	6,835	5,583	1,252	257,475
July	218,490	183,107	35,354	4,220	3,151	1,069	222,710
Aug.	187,197	155,425	31,772	4,544	3,426	1,118	191,741
Sept.	140,566	109,228	31,338	2,646	2,108	538	143,212
Oct.	80,192	58,415	21,727	1,440	761	679	81,552
Nov.	68,867	49,184	19,683	1,247	812	435	70,114
Dec.	121,533	97,897	23,636	2,432	408	2,024	123,965
Total	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932							
Jan.	119,344	98,785	20,541	3,731	3,112	619	123,075
Feb.	117,418	94,110	23,308	5,477	4,494	983	126,621
Mar.	118,959	99,399	19,560	8,318	6,604	1,714	127,277
May	185,149	157,756	27,933	8,221	7,269	952	193,370
June	183,092	160,330	27,754	7,112	6,308	804	190,204
July	111,139	94,705	16,434	7,472	6,773	699	118,611
Aug.	90,324	75,907	14,417	4,067	3,166	901	94,391
Sept.	84,141	64,748	19,393	2,342	1,741	601	86,483
Oct.	48,934	35,339	13,595	2,923	2,361	562	51,857

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[6]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,097	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,053
1931:															
Jan.	41,579	11,029	30,550	7,039	1,315	770	542	424	5,923	7,348	10,328	1,218	994	295	66,746
Feb.	41,951	9,672	32,279	6,365	1,041	945	542	409	4,869	7,206	9,001	1,018	1,271	217	65,163
Mar.	48,589	12,009	36,580	5,881	1,209	930	542	536	5,434	7,104	11,258	1,233	1,338	480	72,475
Apr.	43,453	9,977	33,476	4,333	641	788	455	340	6,473	6,063	8,759	327	629	333	62,617
May	44,281	10,479	33,802	4,242	622	869	455	413	7,373	6,799	10,955	793	1,110	382	67,815
June	39,397	12,115	27,282	5,098	1,086	1,138	455	337	5,856	6,696	11,380	1,019	621	351	61,319
July	43,658	11,995	31,663	4,517	715	801	536	316	6,671	7,511	10,711	859	1,565	186	66,051
Aug.	42,832	9,063	33,769	3,763	406	692	535	210	6,397	7,044	8,641	1,097	856	241	63,451
Sept.	44,336	8,369	35,967	4,029	169	701	535	218	5,577	7,358	8,389	917	745	183	64,788
Oct.	45,911	9,955	35,956	5,547	286	872	500*	338	8,086	7,882	9,547	934	1,284	238	71,467
Nov.	48,012	9,529	38,483	4,609	408	830	500*	390	7,351	8,174	7,981	731	872	233	70,562
Dec.	35,741	11,314	24,427	6,346	572	1,115	500*	287	5,942	8,562	9,059	1,550	836	203	59,399
1932:															
Jan.	44,538	10,304	34,234	4,570	732	756	500*	457	5,155	8,815	8,703	1,248	831	199	66,200
Feb.	42,008	8,008	34,000	4,472	803	696	500*	334	4,814	6,011	6,325	1,096	352	203	59,606
Mar.	39,903	6,658	33,245	3,405	284	501	500*	217	4,946	6,863	6,252	928	715	77	57,933
Apr.	36,670	4,682	31,988	3,046	365	459	500*	130	6,722	6,090	4,856	913	487	99	55,655
May	40,297	5,677	34,620	4,140	304	595	500*	118	6,552	6,551	6,013	949	416	278	61,036
June	36,566	5,665	30,901	3,620	359	481	500*	166	5,610	7,516	5,507	1,231	394	139	56,424
July	40,723	5,346	35,377	3,125	, 99	442	500*	184	5,779	6,257	6,145	974	232	141	59,255
Aug.	39,367	7,371	31,996	5,585	129	506	500*	300	4,803	4,882	7,244	1,164	303	140*	57,552
Sept.	41,973	8,869	33,104	4,361	122	614	500*	340	3,858	6,485	7,664	1,632	318	140*	59,138
Oct.	37,931	9,798	28,133	3,563		583	500*	428	4,022	7,051	8,944	779			
Nov.	40,098			4,450											

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,786	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,629
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,172
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,682	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	15,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,570	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,351	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,633
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1931:															
Jan.	34,873	9,730	5,954	3,847	1,709	2,861	1,036	1,775	601	986	348	464	240	635	65,059
Feb.	32,572	12,226	4,510	3,374	1,927	3,264	1,393	1,022	495	785	157	476	201	366	62,768
Mar.	37,960	12,335	4,386	3,545	3,012	2,323	418	2,531	435	862	346	400	392	507	69,452
Apr.	42,212	9,440	4,346	3,054	2,070	3,478	528	1,450	457	515	333	495	208	324	68,910
May	33,271	8,212	2,880	3,231	2,748	3,755	1,023	1,034	884	1,153	86	495	180	711	58,663
June	43,730	5,636	4,002	3,504	2,112	2,988	1,462	3,279	1,112	1,058	272	577	207	607	70,546
July	42,293	5,366	3,301	3,226	2,592	3,065	809	3,141	627	1,507	41	429	145	1,074	67,816
Aug.	36,709	5,030	3,393	2,889	2,304	3,780	812	3,137	283	955	—57	321	160	413	60,129
Sept.	37,571	5,468	4,420	4,227	1,535	5,556	693	2,335	269	1,015	191	571	99	499	64,449
Oct.	39,820	5,775	3,909	3,220	1,567	3,980	571	4,076	765	792	185	710	193	695	66,258
Nov.	43,659	2,550	2,669	2,621	1,233	3,340	545	2,417	934	729	183	745	297	954	62,876
Dec.	51,323	4,402	2,696	2,950	2,452	5,093	859	4,474	787	652	135	677	283	932	77,715
1932:															
Jan.	32,028	3,248	2,588	3,303	1,746	5,782	627	3,258	622	521	479	540	462	197	55,701
Feb.	26,483	5,930	2,898	4,356	1,723	6,781	1,189	2,931	758	506	500	708	313	306	55,382
Mar.	43,361	3,585	2,482	3,436	2,588	5,398	1,423	2,745	1,211	721	112	456	359	644	68,521
Apr.	36,326	6,826	2,956	3,737	1,600	3,684	1,083	764	1,549	847	348	474	417	1,259	61,870
May	32,818	1,110	2,277	3,447	1,416	3,917	1,033	3,743	2,048	617	286	707	272	350	54,041
June	39,136	1,853	3,666	3,405	2,884	2,834	1,534	5,291	1,421	449	127	578	196	280	63,604
July	30,494	4,081	3,125	3,380	1,529	2,544	1,116	1,735	624	723	—214	784	258	1,207	51,886
Aug.	32,650	6,672	4,919	4,006	970	3,390	1,615	1,740	751	1,211	—66	611	210	557	59,236
Sept.	26,865	5,688	5,845	3,674	2,770	5,878	971		625	964	103	534		406	
Oct.	34,748	4,627	4,715	4,177	1,207				569		553				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	156,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,176,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1930	42,681,000	178,059,000	29,514,000	58,465,000
1931	36,973,000	176,406,000	34,017,000	41,885,000
1932:				
January	2,184,000	12,317,000	3,411,000	2,463,000
February	2,448,000	14,487,000	3,461,000	2,446,000
March	2,463,000	16,868,000	3,953,000	2,638,000
April	2,092,000	11,737,000	2,292,000	2,613,000
May	1,748,000	10,259,000	2,488,000	2,542,000
June	2,243,000	11,299,000	2,461,000	2,672,000
July	2,013,000	9,868,000	2,419,000	2,024,000
Aug.	2,952,000	11,073,000	2,599,000	2,152,000
September				

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	—	—
1920	758	845,995	1,064	1,260,043	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	351,893	—	—
1922	127	87,040	812	978,765	2,335	403,812	—	—
1923	1,155	542,227	700	893,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	——	——	1,208	411,692	5,777	1,019,010	4,650	884,355
1931:								
July	—	——	67	20,777	331	64,493	583	104,868
Aug.	—	——	73	30,207	652	100,536	364	60,358
Sept.	—	——	126	35,174	407	65,232	439	72,443
Oct.	—	——	100	13,846	415	75,219	267	43,238
Nov.	—	——	36	11,539	276	50,062	265	40,649
Dec.	—	——	93	37,815	648	62,657	282	41,771
1932:								
Jan	—	——	54	14,095	633	81,396	331	40,613
Feb.	—	——	100	24,702	558	84,914	439	52,183
Mar.	—	——	114	20,628	460	59,299	391	44,585
Apr.	—	——	46	10,909	317	44,165	551	46,397
May	—	——	42	9,863	566	68,028	141	27,449
June	—	——	38	9,483	330	47,077	309	28,800
July	—	——	26	7,934	372	52,116	218	37,327
Aug.	—	——	36	8,885	367	46,926	540	59,178
Sept.	—	——	11	2,261	216	27,265	297	46,380
Oct.	—	——	84	17,451	349	48,816	711	69,053

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption	% to Crude	Stocks*	Year	Production	Consumption	% to Crude	Stocks*
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	87,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	90,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1925	132,930	137,105	35.6	13,203	1930	157,967	153,497	40.8	22,000
1931:									
Jan.	10,349	10,723	37.6	22,429	July	11,393	11,447	35.8	17,720
Feb.	10,871	10,800	37.5	18,878	Aug.	10,110	9,972	36.2	17,165
Mar.	12,938	12,524	38.3	18,375	Sept.	9,629	8,932	37.6	17,226
Apr.	13,267	11,745	35.0	18,356	Oct.	9,482	8,126	36.6	17,741
May	13,478	13,103	34.6	18,088	Nov.	7,892	7,492	32.6	17,662
June	14,066	13,045	34.4	18,505	Dec.	8,876	6,812	31.8	19,257
1932:									
Jan.	8,753	8,440	30.2	18,712	July	5,417	5,131	18.1	16,333
Feb.	8,731	8,332	27.7	18,659	Aug.	3,264	4,382	18.6	14,629
Mar.	8,613	7,420	26.7	19,721	Sept.	5,308	5,235	23.2	14,059
Apr.	5,561	5,555	21.6	21,525	Oct.	6,605	5,494	26.1	13,911
May	5,024	6,070	20.8	18,889	Nov.				
June	5,923	7,031	18.0	16,870	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.

(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

THE EFFICIENCY CONTROL OF PRODUCTION. By Thomas W. Fazakerley. Published by Gee & Company, Ltd., London. 74 pp. 1932. 5s. 6d. for the United States, postage prepaid.

Coming from such a well-known British rubber authority in manufacturing processes the book has a particular interest to those in the industry engaged in the factory and managerial end of rubber goods fabrication. While the author treats the subject generally, he necessarily turns to his wide experience in the rubber industry in the expounding of his theories. Charts, helpful suggestions for production graphs and factory paper work and practical forms for keeping close and efficient contact with production operations and costs are given in the book. The volume can well be studied to advantage, in these times especially, when savings are paramount, by the factory executives of rubber manufacturing establishments.

PENSION AND FAMILY PROVISION SCHEME. Published for Members of the Institution of the Rubber Industry, London. 11 pp. 1932. For free distribution.

The scheme for pension and relief outlined in the booklet is the result of considerable investigation by a committee of the Institution. It is only for members and makes adequate provision for them upon retirement or for the family in the event of premature death of the member. In view of the present agitation for industrial insurance of some kind, it is interesting to note the plan which has been worked out amongst the members of the rubber industry in Great Britain as a suggested measure.

GOODRICH ZERO PRESSURE TIRES FOR TRACTORS, ETC. Published by The B. F. Goodrich Company, Akron, O. 12 pp. 1932. For free distribution.

Profusely illustrated, the booklet, titled "Goodrich Zero Pressure Tires for Tractors, Graders, Mowers, Maintainers," discusses the new tire product under the following headings: "What is Zero Pressure?"; "Resiliency Versus Flexibility"; "Compared with Solids and Pneumatics"; "Saving Time and Money," and "They Can't Go Flat."

ANNUAL REPORT OF THE DIRECTOR OF THE BUREAU OF STANDARDS. Published by Department of Commerce. Government Printing Office. Washington, D. C. 40 pp. 1932. 10 cents.

The activities of the Bureau of Standards extend into the field of rubber in so many directions that any report of this governmental agency is bound to have some interesting reference to work pertinent to the industry. For instance, in the last year a study of sounding, pilot and ceiling rubber balloons used in the Weather Bureau resulted in improved life and quality and provided data for calculating the performance of the balloons in the upper atmosphere. This is only one of the interesting studies made by the Bureau touching upon the rubber industry.

1932 EDITION-BOOK OF AMERICAN SOCIETY FOR TESTING MATERIALS TENTATIVE STANDARDS. Published by A. S. T. M. 1932. $8.00 (cloth binding).

The Book of A. S. T. M. Tentative Standards is issued annually by the American Society for Testing Materials. Each year it includes all of the tentative standards in effect at the time of publication. The term "tentative" is applied to a proposed standard, which is given approval throughout the various steps of A. S. T. M. procedure, and which is published for one or more years to elicit comments and criticism, of which cognizance is taken before it is formally adopted and issued as an A. S. T. M. standard. Although in the trial stage, these tentative standards are in wide use due to their careful promulgation. The 1932 Book of A. S. T. M. Tentative Standards includes all of the 226 tentative specifications, test methods, definitions of terms and recommended practices effective as of October 31, 1932, including eight new standards applicable to rubber products. Specifications adopted this year for insulated wire and cable, performance rubber compound and tolerance and test methods for tubular sleeving and braids are given, amongst others.

PRODUCTS OF MANUFACTURING INDUSTRIES. Census of Distribution. Department of Commerce, Washington, D. C. 1932. 169 pp. 15 cents.

This presentation of census of manufactures statistics is particularly adapted to the needs of sales promotion and marketing departments of commercial establishments. The index lists a wide range of rubber products. Copies may be purchased from the Superintendent of Documents, Government Printing Office, for 15 cents each.

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The RUBBER AGE

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A Prosperous New Year

IT takes courage to talk enthusiastically today about prosperity but courage is needed if we are going to bring prosperity back. THE RUBBER AGE believes that this depression can be licked by the display of business courage. Certainly it can be said that the prosperous businesses in 1933 will be the ones which will have displayed that business courage which fights for profits with ethical sales efforts. We wish all of our friends in the industry, or associated with it,

A Prosperous New Year